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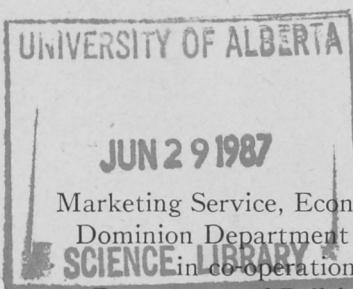
DOMINION OF CANADA—DEPARTMENT OF AGRICULTURE

LAND SETTLEMENT IN *NORTHEASTERN ALBERTA* 1943

B. H. KRISTJANSON

and

C. C. SPENCE



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FOREWORD

This is the third in a series of reports on investigations dealing with land settlement problems in northern Alberta. These investigations have been carried on by the Economics Division, Marketing Service, Dominion Department of Agriculture, Ottawa, in co-operation with the Department of Political Economy, University of Alberta.

The Experimental Farms Service, Dominion Department of Agriculture, and the Department of Soils, University of Alberta, gave valuable assistance by providing a reconnaissance survey of the soils of the area covered by the study.

The authors desire to acknowledge also the assistance of Messrs. J. L. Anderson, W. D. Gainer, and J. W. Garvin in the enumeration of the data, and, both in the enumeration and the analysis of the data relating to the level of living, the assistance of Miss F. M. Edwards.

The work has been aided by the helpful criticisms of Professor Andrew Stewart, Department of Political Economy, University of Alberta.

Finally, the authors wish to acknowledge the generous co-operation of the farmers of the Bonnyville area in supplying much of the basic information for the study.

Articles based on material obtained during the progress of this study have been published in the Economic Annalist.

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SUMMARY

About two hundred farmers were interviewed during the summer of 1943 in northeastern Alberta with a view to obtaining an insight into the factors involved in the problems of land settlement. The study was an examination of the land settlement process, the farm management practices for the year under review and the level of living which prevailed. A reconnaissance soil survey of the area was made by the Experimental Farms Service, Dominion Department of Agriculture and the Department of Soils, University of Alberta.

Organized settlement in the area was first promoted by the Roman Catholic Church and was originally confined to the Indian population, but shortly after the turn of the century it was extended to include the white people. French-Canadians were encouraged to come West. The subsequent immigration from Europe has provided the second main national group—the Ukrainians.

The significance of providing settlers with adequate credit or outside employment while the farm is being developed can hardly be overestimated. Farmers in this area have until very recently been improving their land at an average of from four to five acres per year. This has meant that it has taken from fifteen to twenty years to break sufficient land to organize a reasonably satisfactory farm unit. However, with the improved price conditions of the past few years and the larger number of tractors being purchased within the area, the rate of breaking has been speeded up considerably.

The average cost per acre of clearing, breaking, and root picking for land in the Bonnyville area during the fourteen-year period 1929 to 1942 was approximately \$15. Costs of clearing varied greatly, depending upon the cover, the range being from \$2 to \$12 per acre. The modern brush cutter and bulldozer had not come into use in this area. Breaking costs varied only slightly, the range being from \$5 to \$7 per acre with a tendency toward the \$5 figure.

The first stages in the development of this area agriculturally were characterized by a Subsistence type of farming accompanied by considerable amounts of outside employment. This has been replaced in most cases by either a Mixed or Livestock type; the operators of these farms sought little or no outside work during the year in which this study was made.

There has been a pronounced trend toward increasing dairy and hog production. It is only within recent years that legumes have been grown but they have now been given a place on these farms.

Considerable interest was current in alfalfa seed production. Very satisfactory results had been obtained by a number of farmers in the district and, although these results had not been consistent, about 200,000 pounds of alfalfa seed were shipped out of the St. Paul-Bonnyville area during 1942.

The Operator's Labour Earnings were highest on the Livestock farms, being \$1,028 per farm, and the lowest on the Grain farms, \$398 per farm. The incomes on most farms in the Bonnyville area were closely associated with numbers of productive units kept per farm.

There appeared to be an association between the number of acres cultivated and amount of livestock kept. The relationship was as follows: farms having

100 acres or less under cultivation had 10 to 11 productive animal units; farms having 101 to 175 acres under cultivation carried from 17 to 20 productive animal units; and farms having more than 175 acres cultivated (an average of 231 acres) carried about 28 productive animal units.

Of the two main factors determining the income of these farms—crop and livestock intensity—the latter has been becoming the more important. Crop and livestock production were complementary enterprises but under better than average price conditions the increase in livestock production has been the more pronounced.

The minimum farm unit recommended for this area is one comprising 125 to 150 acres of land under cultivation and carrying around 16 productive livestock units. In order to obtain this amount of cropland and adequate pasture for the livestock, a total farm area from one to two quarter-sections would be required. The average size of farm in the area was about two quarters. A unit of the size suggested would require the full attention of one man plus 4·5 months of additional labour during the year.

An effort was made in this study to examine in detail the various aspects of hog management since hog production was the most important single enterprise within the area studied. It was found, among other things, that a trend toward better feeding practices was in evidence but that more satisfactory results could be obtained through better housing and improved conditions of sanitation.

Attention was given also to an appraisal of the level of living current in the Bonnyville area. The average cash expenditures on farm family living during the year amounted to \$615 per farm, with a range of from \$10 to \$15 per adult month. This was in addition to the perquisites furnished by the farm business. This, however, was undoubtedly considerably higher than the long-term average expenditure and the fact that more than one-half of the homes were of their original log construction bears mute testimony to leaner years in the not-so-distant past.

LAND SETTLEMENT IN NORTHEASTERN ALBERTA—1943

B. H. KRISTJANSON¹ and C. C. SPENCE²

PART I THE SETTLEMENT PROCESS

INTRODUCTION

There is a growing awareness of the need for a sound land settlement policy in Canada. The era of haphazard settlement, throwing open wide areas without prior consideration as to their suitability for farming is past. Today, it is realized that it is necessary to consider in advance not only the physical conditions—soil, topography, climate, etc.—but also the economic and social aspects of land settlement projects.

It is likely that future settlement will be controlled, and will be associated with definite movements, such as settlement of war veterans, immigration policies, and rehabilitation of farmers uprooted as a result of drought, recurrent hail damage or submarginal land in other areas.

During the summer of 1943 approximately two hundred farmers were interviewed in the vicinity of Bonnyville, Alta. This survey was designed to obtain the facts concerning settlement in northeastern Alberta and, to this end, twelve townships were selected in the vicinity of Bonnyville (Figure 1). In consultation with the District Agriculturist at St. Paul, Alta., townships 60, 61, 62, and 63 in ranges 4, 5, and 6, west of the fourth meridian were selected for the study. The selection was made on the basis that settlement north of the Beaver River was of such recent origin that the initial stages could be examined in detail while, south of the Beaver, particularly in the immediate vicinity of the town of Bonnyville were to be found farms which had reached an advanced stage of development.

This work constituted only a portion of the total investigation however, since the project involved several areas in Alberta and Saskatchewan which were studied during 1941 and 1942. Their selection was designed to provide a representative picture of the northern fringe of settlement in Western Canada.³

The Experimental Farms Service, Dominion Department of Agriculture and the Department of Soils, University of Alberta provided a reconnaissance survey of the soils of the Bonnyville area. The findings appear in the appendix, "Soil Survey Report". This made possible a comparison of the farms found on the two soil types of the area, namely, the black and the grey wooded soils.

¹ Formerly Agricultural Assistant, Dominion Department of Agriculture.

² Agricultural Economist, Dominion Department of Agriculture.

³ See E. C. Hope and R. A. Stutt, "An Economic Study of Land Settlement in the Albertville-Garrick Area of Northern Saskatchewan, 1941", Economics Division, Marketing Service, Dominion Department of Agriculture, Ottawa in co-operation with the University of Saskatchewan, issued January, 1944 (processed report). Three other studies published in co-operation with the Universities of Saskatchewan and Alberta, include: R. A. Stutt and H. Van Vliet, "An Economic Study of Land Settlement in Representative Pioneer Areas of Northern Saskatchewan"; B. K. Acton and C. C. Spence, "Pioneer Farming and Municipal Finance in the Sangudo-Wintfield Area of Alberta, 1941"; and B. K. Acton and C. C. Spence, "A Study of Pioneer Farming in the Fringe Areas of the Peace River, Alberta, 1942".

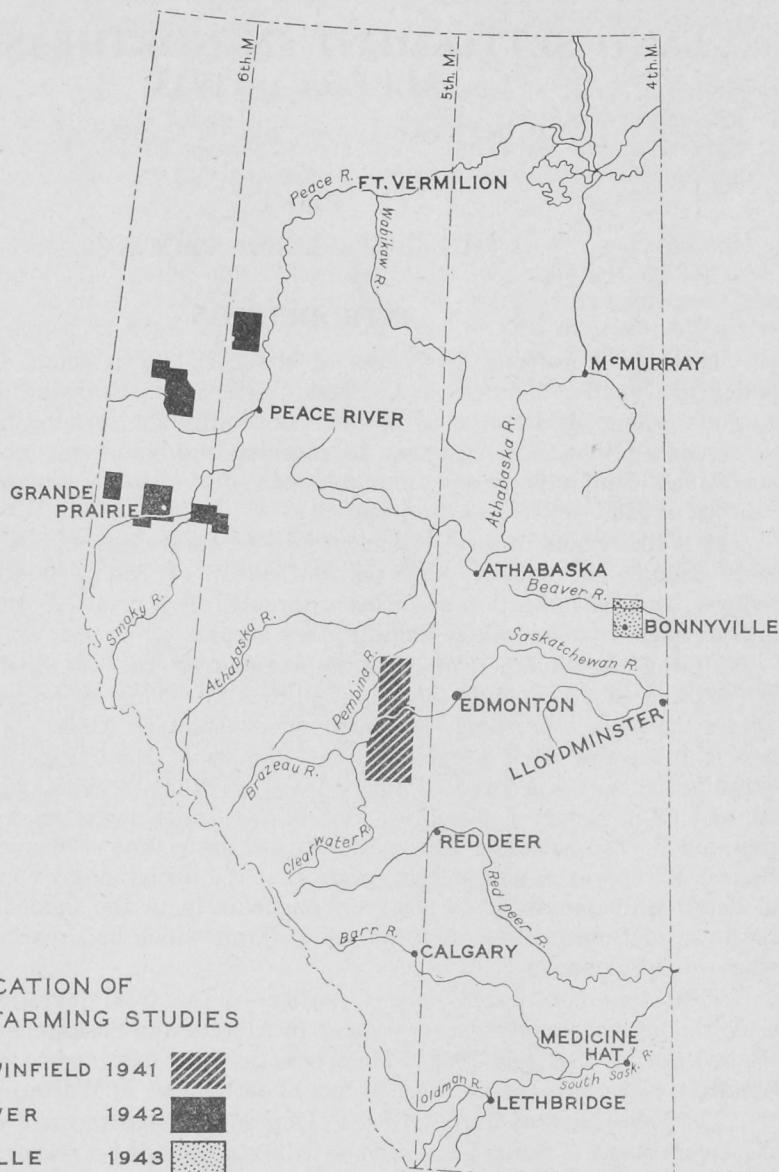


FIGURE 1

The Problem

In view of the fact that the question of land settlement had assumed such importance in post-war rehabilitation schemes it was considered essential that the settlement process should be analysed and understood. Basic to this was an examination of the development of the area and its farms, of farm practices, of farm incomes, and of the resultant levels of living. Consequently the approach

used in this study has been one which traced the stages by which individual farms have been developed while, at the same time, it provided sufficient data to make possible a "farm management" analysis of the agriculture of the district. Essentially this study has been concerned with obtaining a clear understanding of the factors involved in the development of a selected area with a view to a broader application of the results of the study.

History of Settlement

The history of the settlement of the Bonnyville district, particularly its early history, is closely associated with the growth of the Roman Catholic church in northeastern Alberta. So far as the white population is concerned, in this region settlement began in the period 1900 to 1905. During this early period the church was by far the most active colonizing agent, engaging in this work in an organized fashion as early as 1896 when Father LaCombe asked for the assistance of the Dominion Government. According to the following quotation the original efforts were directed towards the half-breed population: "Father LaCombe caused the Federal Government to realize that this situation demanded a special remedy. . . . The colony lands should still belong to the Government. They should be let to a syndicate which would direct the enterprise, and, by this body, be sublet to the half-breeds at a nominal price in lots of eighty acres for each family, and the half-breeds could not alienate these lands. . . . A carefully thought out scheme presented by Mr. A. M. Burgess, Deputy Minister of the Interior, received the sanction of the Governor General in Council and realized the hopes and desires of Father LaCombe."

"Four townships, that is a space of twelve square miles, about 140 sections . . . were granted for twenty-one years to a syndicate composed of the Episcopal Corporations of St. Albert, St. Boniface, Prince Albert, Father LaCombe and two laymen, Hon. Judge Ouimet and the Hon. Senator R. Dandurand, for the realization of what was called, the redemption of the half-breeds."¹ It was a matter of only a short time however until the plans for colonization began to include members of the white race as well.

A mission had been established at Lac La Biche in 1853 but by the turn of the century St. Paul had become the central mission and henceforward remained the centre of the church's activities in this area. In 1896 there were twenty families in St. Paul and in the following year saw-mills and flour mills were transported from Lac La Biche. By 1906 a convent for Indians had been constructed, a dormitory for seventy boys had been opened and a church had been built.

Efforts towards the establishment of white settlers were evident when, in 1907, one hundred homesteads were reported north of the settlement in the parish of St. Vincent and about sixty homesteads northeast of Moose Lake. The Most Reverend E. J. Legal wrote, "It was useless to discourage this tide which was about to be still further increased . . . it was resolved to bring a select class of excellent colonists to occupy the magnificent lands extending to the east and north of the settlement as far as Moose Lake and the valley of the Beaver River."² The attention of the church had thus been directed permanently toward establishing "selected" settlers, the majority of them French-Canadians from Eastern Canada. By this time some of the pitfalls of settlement policies followed in other areas in Canada as well as in the United States had become common knowledge and there was an attempt made here to profit by the experience of others. The evidence gained from the local newspaper indicates a strong

¹ "History of the Catholic Church in Alberta", page 71, compiled by the Most Reverend Emile J. Legal, O.M.I.

² Ibid., page 74.

determination on the part of settlers who, having arrived, were resolved that only those who intended to establish themselves as resident farmers should be permitted to take title to land.¹

The church was, and continues, a powerful influence in the lives of the inhabitants of this region. There were districts which were entirely French-Canadian in character and even today some of the older settlers speak only the French language. However the rehabilitation of soldiers in this area following the first World War and the subsequent immigration of Europeans altered this situation considerably, the result being a highly heterogeneous population.

Development, 1921 to 1941

While Census Division 13 includes much more territory than was examined in the twelve townships selected for this study, the townships were selected because they were considered representative of a larger area. Data appearing in the Census of Canada for Division 13 have been employed therefore to indicate trends in its development.²

Population Growth.—Canada witnessed her greatest influx of immigrants during the first decade of the present century. In addition to this early development however it may be seen from Table 1 that the area known as Census Division 13 has experienced a continued influx of settlers somewhat greater than that which occurred between 1901 and 1910. Immigration here was heaviest during the fifteen-year period, 1901 to 1916, and in the ten years between 1926 and 1936. The settlers interviewed in this study came, for the most part, in 1926 or later. While the former period was characteristic of the

TABLE 1.—POPULATION TRENDS, CENSUS DIVISION 13, ALBERTA, 1901 TO 1941^a

Year	Indian Population	Total Division 13	St. Paul	Vilna	Bonnyville	Bellis
	No.	No.	No.	No.	No.	No.
1901.....	1,372	1,490	.....	.....	.....	.....
1911.....	1,665	7,300	.....	.....	.....	.....
1916.....	1,505	13,908	324	.....	.....	.....
1921.....	1,207	16,288	869	.....	.....	.....
1926.....	1,398	17,174	933	131	.....	.....
1931.....	1,514	24,936	938	151	362	117
1936.....	1,720	30,602	950	253	433	127
1941.....	1,859	33,172	1,018	311	603	128

early settlement in Northwestern Canada at that time the nature of the latter period differed somewhat. It differed in that in addition to the immigration from Europe the upswing of the general price level (until it fell again in 1930) encouraged agricultural expansion northward. Furthermore, the disastrous conditions prevailing in the more arid parts of the country between 1930 and 1935 added to this movement in migrations from such areas to more humid areas. In other words, part of the expansion of the second period was to some extent a "resettlement".

¹ The St. Paul *Star*, May 19, 1921, carried a protest against high pressure advertising of land in the district and made a plea that only "honest-to-goodness farmers" be admitted to the fold.

² The extent of Census Division 13 has been defined as follows: the Municipalities of Lincoln (542), Laurier (543), Champlain (544), Bonnyville (572), St. Vincent (573), St. Lina (574), Vilna (575), Ashmont (605); Local Improvement Districts 541, 571, 601, 602, 603, 604, 631, 633, 634, 635, 664, 666, 695; Territorial Unit 632; Indian Reserves; and the Villages of Bellis, Bonnyville, St. Paul, and Vilna.

^a Census of Canada.

During this latter period, 1926 to 1936, large numbers of settlers came from Central and Northern Europe and by 1941 Ukrainians represented the largest nationality group within this area, being 28 per cent of the total (Table 2). The two groups, Ukrainians and French, account for a little more than one-half of the population. Due to differences in national origin, certain community

TABLE 2.—NATIONALITY OF POPULATION, CENSUS DIVISION 13, ALBERTA, 1941¹

—	Number	Percentage
Total Population.....	33,172	100
Ukrainian.....	9,372	28
French.....	7,479	23
English, Scotch, Irish.....	5,977	18
Scandinavian.....	2,167	7
Polish.....	1,657	5
German.....	1,114	3
Russian.....	335	1
Netherlands.....	336	1

problems have arisen. One example of such problems was the matter of the relative amounts of French and English which were to be spoken and taught at a particular school. However, such matters will eventually be settled as the communities mature and the sources of friction are thus removed. On the whole, it must be said that the area covered by this study showed no serious conflicts arising out of differences in national origin which could not be settled by time and understanding.

Land Utilization Changes.—Expansion of the area occupied by farms was small during the five-year period, 1921 to 1926, but an internal expansion occurred in that the cultivation increased from 19 per cent to 27 per cent of the total area occupied by farms. The increase in area occupied by farms during the following ten years amounted to 100 per cent of the 1926 level (Table 3) in a period which included both economic expansion and depression. The expansion between 1926 and 1931, under conditions of a rising price level, continued to 1936 in spite of the advent of the depressed economic conditions. The rising price level of the years 1936 to 1941 brought further increases.

TABLE 3.—LAND USE, CENSUS DIVISION 13, ALBERTA, 1921 to 1941²

—	1921	1926	1931	1936	1941
Area occupied by farms..... Ac.	651,696	698,529	1,099,993	1,272,369	1,452,165
Acres improved:					
Total..... Ac.	124,276	188,623	323,919	393,796	517,666
Field crops..... %	81	80	78	73	67
Fallow or idle..... %	16	18	20	24	30
Pasture..... %	3	2	2	3	3
Acres unimproved:—					
Total..... Ac.	527,420	509,906	776,074	874,573	934,949
Woodland..... %	41	40	49	54	28
Prairie or natural pasture..... %	51	51	41	32	59
Marsh or waste..... %	8	9	10	14	13

¹ Census of Canada.² Census of Canada. Data for 1941 are from a preliminary release.

While there was a general expansion in the acreage of all crops from 1921 to 1936 the chief increase occurred in the wheat acreage (Table 4). The decrease in the wheat acreage in 1941 was accompanied by substantially larger acreages of oats and barley, particularly the latter. This was, no doubt, due to the operation of the Wheat Acreage Reduction Act and to the comparative advantage of the more humid areas of the West in the production of coarse grains.

TABLE 4.—TRENDS IN PRODUCTION OF FIELD CROPS, CENSUS DIVISION 13,
ALBERTA, 1921 TO 1941¹

	1921	1926	1931	1936	1941
	Ac.	Ac.	Ac.	Ac.	Ac.
Wheat.....	27,165	87,332	138,689	158,998	130,893
Oats.....	58,392	44,573	73,461	76,851	67,598
Barley.....	4,770	6,240	14,665	29,312	119,759
Rye.....	1,194	699	585	638	1,099
Cultivated hay.....	2,122	1,075	2,124	4,262	14,860
Potatoes.....	1,257	783	1,240	1,660	1,608
Other crops ²	3,341	6,537	11,610	11,592	10,279
Total.....	98,241	147,239	242,374	283,313	346,096

The increase in the cultivated hay acreage is significant because it reflects a trend toward greater production of legumes as a fodder crop. Wild hay has been rather plentiful but, for the dairy enterprise in particular, the legumes are being grown more extensively as their value becomes better appreciated.

Livestock Production Trends.—The increase in the livestock population in this area has not been uniform. During the twenties the numbers of cattle decreased somewhat below the 1921 level while in this same period sheep and swine increased in numbers (Table 5). The emphasis on hog production has proceeded further, particularly under the demands of a wartime economy, and promises to result in a level of hog production permanently higher than that which existed prior to 1939. Since 1931 the dairy stock of the area have been gaining in importance and in fact dairy and hog production have now become the backbone of the economy. In other words the trend during the last ten years has been toward a greater emphasis on livestock production.

TABLE 5.—TRENDS IN LIVESTOCK PRODUCTION, CENSUS DIVISION 13, ALBERTA
1921 TO 1941³

	1921	1921	1926	1931	1936	1941
	No.	%	%	%	%	%
Horses.....	17,897	100	103	129	145	176
Milch cows.....	13,625	100	89	101	170	150
Sheep.....	3,944	100	110	335	323	329
Swine.....	15,871	100	165	258	241	589
Poultry.....	139,640	100	123	199	190	294

Markets.—This territory has, until recently, been restricted in its development due to a lack of market outlets. In addition to the great distances which had to be reckoned with in reaching outside markets, the North Saskatchewan

¹ Census of Canada. Data for 1941 are from a preliminary release.

² All other crops including grain hay and mixed or other grain crops.

³ Census of Canada. Data for 1941 are from a preliminary release.



Plate 1.—The Town of Bonnyville, Alta., is a busy trading centre.



Plate 2.—Horses are the chief means of transportation from the farms to the market at Bonnyville, Alta.

River afforded a natural barrier to transportation. The advent of the railroad brought changes and one of the effects of the coming of the steel to St. Paul in October, 1920, may be seen from the following quotation: "Now that they have an assured market, many are going in more heavily for grain, and it is expected that the amount sown next season will exceed this year's crop by fifty per cent".¹ At this time it was important also for these people to find outlets for livestock products, fish, furs, and forest products. The main roads have been improved and the railway mileage extended to make these transportation facilities within reach of more people. Since 1928 the Bonnyville district has been serviced by railroad.

¹ The St. Paul *Star*, April 14, 1921.

At the present time the district boasts four grain elevators at Bonnyville in addition to a co-operative livestock association and a creamery. As an indication of the increase which has occurred in the production of butterfat the following output figures of the Bonnyville Creamery are significant (Table 6).

TABLE 6.—BUTTER PRODUCTION, BONNYVILLE CREAMERY, 1930 TO 1943

Year	Pounds of butter produced	Percentage of 1930 production	
		Lb.	%
1943.....	633,712	1,174	
1942.....	530,752	983	
1938.....	367,509	681	
1934.....	197,000	365	
1930.....	54,000	100	

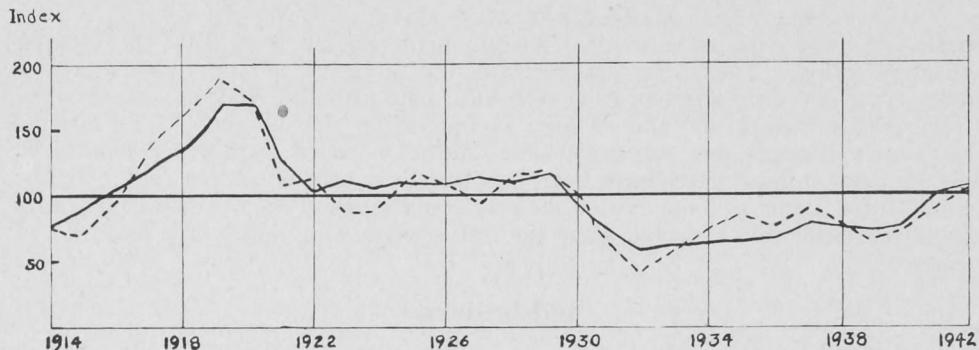
Since this creamery is the only one operating in the Bonnyville district these figures serve as a good indicator of the growth of the dairy industry here. Complementary to this development the co-operative livestock association has prospered and already has demonstrated its efficiency in considerable savings for farmers in marketing livestock.

While it is true that the railroad and highways have played an invaluable part in the expansion in this area the fact remains that the farm-to-market roads are, by and large, poor. Practically no roads had any gravel at the time this survey was made and some producers spent an entire day in going to market each day. When such trips have to be made frequently it constitutes a considerable factor in the reduction of production efficiency. But the provision of adequate roads in the newer areas such as this one is a problem not easily resolved since good roads demand a guarantee of considerable travel to justify any large public outlay, and such a guarantee is in itself dependent upon adequate roads in order that production may be carried out efficiently.

General Economic Conditions.—In the interpretation of the results of this survey the fact must be borne in mind that during the year ended April 30, 1943, farm production had been definitely stimulated through the demands of a wartime economy. The most significant response to these demands occurred in hog production, due mainly to a favourable grain-hog ratio.

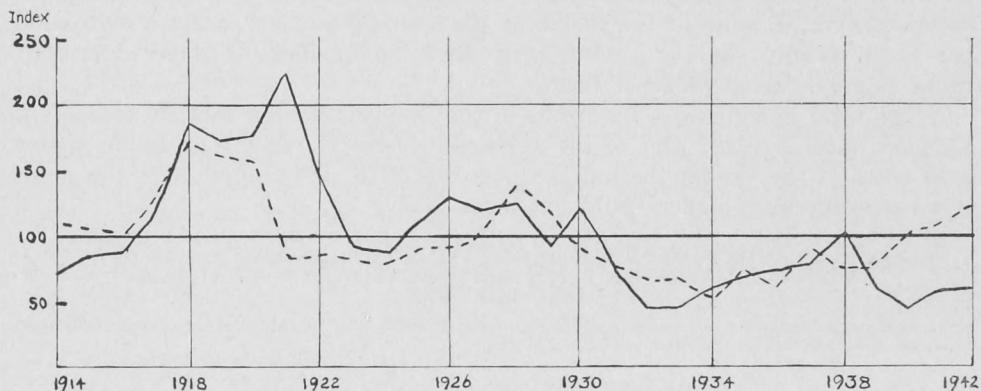
The price of wheat began to make a partial recovery in 1934 and continued to improve until 1938 but in that year the price fell again, and at the time of this survey was still considerably below the average for the period 1914 to 1942 (Figure 2). The prices for livestock and livestock products on the other hand have improved steadily from the extreme depression levels. Prices of farm products were quite encouraging and the position of the farmers in the vicinity of Bonnyville was, on the whole, more satisfactory than it had been for a number of years.

In 1942 hog and butter prices had risen slightly above the long-time average and the price of good butcher steers was well above that average. The situation was commonly referred to by residents as "the best in years" in spite of the fact that such items as farm machinery and labour could be obtained in limited amounts only.



--- HOGS: Average price in August of bacon hogs, B-1 at Toronto

— BUTTER: Average yearly wholesale jobbing price of creamery butter No.1 Montreal. (1942 quotation for month of August only.)



--- STEERS: Average price in August, good butcher steers at Toronto.
(1914-39, 1,000 - (200 lbs., after 1939, up to 1,050 lb.)

— WHEAT: Average price of wheat in August, No.1 Northern, Ft. William

FIG. 2.—Price indexes of four farm products, 1914-1942 inclusive (1914-1942=100)

Land Acquisition

While practically all land in farms in this area was taken up on a homestead basis, a portion of it now has been purchased from the original owners. In other words there has been some change in ownership. This has been a gradual change however and, while land sales have increased considerably in the last few years, they have been, comparatively speaking, few in numbers. Sales have been so infrequent as to render the establishment of a sale price on lands difficult. Very little outside capital has been attracted to the agriculture of this area and those transactions which have occurred have been largely between individuals or between individuals and governments.

Two out of every three farms in the Bonnyville area were still in the hands of the original homesteader. Another 29 per cent had been purchased and had therefore undergone a change in ownership at least once. One farm had been acquired from the Soldier Settlement Board and two others had been obtained under the recently inaugurated Provincial Agricultural Lease legislation.

Of the land which changed ownership a few parcels were sold on a cash basis but most entailed a small down payment ranging from \$100 to \$350 per quarter-section. The usual arrangement for payment of the balance was a delivery of one-third share of each crop until paid although some contracts called for one-half, two-thirds, and as high as four-fifths of each crop. The interest rates on mortgages and agreements-for-sale have varied from 3 per cent to 10 per cent but in most cases have been between 4 per cent and 6 per cent. On the whole there seems to have existed a fairly sound appreciation of what payments could be reasonably expected since the terms were being met in the majority of cases.

Indebtedness

Under the old homestead laws, or until the time of the change in Alberta homestead policy in 1939, the cash outlay for a quarter of land was \$10 and under those circumstances the land was acquired obviously free of a land debt. Much of this freedom from land indebtedness has continued to the present time north of the Beaver River where land indebtedness amounts to only \$94 per farm. It is probable that, as time goes on, this indebtedness will increase. South of the Beaver, in spite of the fact that the average number of acres cultivated per farm is only slightly greater, this land indebtedness is more than four times as great, being \$432 per farm.

The total indebtedness for farms in the Bonnyville area was an average of \$534 per farm or 9 per cent of the average investment per farm. In the newer area north of the Beaver the indebtedness was \$276 per farm while to the south it was considerably higher—\$675 per farm (Table 7).

TABLE 7.—ELEMENTS OF INDEBTEDNESS ON FARMS IN TWO AREAS OF THE BONNYVILLE DISTRICT, 1943, REPRESENTING TWO STAGES IN DEVELOPMENT

Type of Debt	Indebtedness per Farm		
	South of Beaver River	North of Beaver River	All Farms
			\$
Land.....	432	94	313
Machinery.....	32	23	29
Taxes.....	69	88	76
Medical.....	72	28	56
Other.....	70	43	60
Total.....	675	276	534
Number of Farms.....	108	59	167

On the surface it may appear that these farms have been relatively solvent. Solvency, however, depends as much upon the surplus earnings available to retire debts as it does upon the amount of the indebtedness. Since it is common knowledge that Canadian agriculture calls for considerable capital outlay in order that an adequate income be produced, it should be obvious that one of the most important factors determining the rate of development in pioneering areas is the availability of sufficient credit at a rate of interest which permits the retirement of such loans as may be found useful. These funds have not been forthcoming to settlers at the time they were required for farm development because pioneer agriculture has not provided the surplus earnings neces-

sary to retire such indebtedness. An average indebtedness of \$29 per farm for machinery and equipment (Table 7) is good evidence of the extent to which these farms have had to operate on a cash basis. In view of the fact that the average homesteader has had very little operating capital to make his start the necessity of operating on a cash basis has been responsible in no small measure for the slow rate of development of these farms.

Tenure

Eighty-two per cent of the present operators of farms in this district were born on farms. Generally they had worked on their parents' farm for a number of years prior to assuming the responsibilities of ownership, the average time for such work being eight years. Only a small proportion had worked on other farms on a full-time basis, and for those that had, the average period of such work was six years. Only 28 per cent of the present owners had rented farms before acquiring the present one and the rented farms were in other localities.

In older settled areas it is usually found that a large proportion of the owners had reached that stage through the successive steps of first employment on the home farm, then as a hired man on a neighbour's farm, then a renter, and finally an owner. In this pioneer region the majority acquired ownership without passing through the intermediate steps.¹

Seventy-seven per cent of the farms in the Bonnyville area were owned by their operators. This was a considerably higher proportion than that recorded for Alberta as a whole (63 per cent) and the proportion of rented farms was correspondingly smaller, being only 4 per cent here as compared with 20 per cent for the province. Part-owners accounted for about 20 per cent in both cases. The more frequent occurrence of owners in the newer regions is an accepted fact, however, as it is generally understood that, after the older areas have been developed and land values have risen, ownership becomes more difficult to maintain in the hands of the farm operators, particularly after the land has been alienated from the initial owners.

General opinion has it that the poorer land with its lower net returns is characterized by a higher proportion of owner-operated farms.² But the cost of developing an acre of land in the Bonnyville area, particularly on the poorer soils (grey wooded) has exceeded considerably the capitalized value of its net product. There has been a tendency therefore to increase the size of farms by renting any available cropland in order to avoid the excessive costs of land development. Thus it may be stated that where the cost of developing land exceeds the capitalized value of its net returns there will be a tendency toward an increase in the proportion of rented land.

Wherever marginal or submarginal lands have been taken up for settlement (that is, where the costs of development are excessively high in relationship to the returns) some settlers will eventually seek an avenue of escape. The length of time which a family will remain in such areas depends on a number of factors. Now, if one or more of the following occurs:

- (1) a marked improvement in urban employment
- (2) sufficient non-farm income becomes available for evacuation

¹ Thirty-five per cent of the operators had owned other farms but had left them for various reasons such as poor soil, drought conditions, and so on.

² Such a generalization should be qualified, however, when the costs of land development exceed the capitalized value of its net product (or rent). A further deviation from the general association of increased tenancy with increased land values was noted by C. C. Spence and E. C. Hope, "An Economic Classification of Land in Fifty-Six Municipal Divisions, South Central Saskatchewan", pages 27 to 28, Technical Bulletin Number 36, Economics Division, Marketing Service, Dominion Department of Agriculture, Ottawa, Canada, 1941: "It is interesting to note that, of the occupied land, the proportion of land which is owner-operated tends to increase with the higher land classes; whereas the proportion of land which is rented tends to decrease with the higher land classes." They offered as a possible explanation: "It may also be true that the migration which has taken place in recent years from this area has resulted in more of the poorer land being available for rent and nearby farmers have preferred to rent rather than purchase."

- (3) the children leave the farm
- (4) the land market improves substantially
- (5) the operator becomes unable to carry on because of ill-health or old age,

or, in other words, if a situation develops whereby it is advantageous or necessary to leave, then there will be a tendency for such movement. But such opportunities do not occur for all people at the same time and thus a bargain may be struck between those leaving and those who must stay. This in effect constitutes an opportunity for the operator remaining to rent additional cultivated acreage for less than the cost of its original development.

The amount of land abandonment and renting in these poorer areas may be reduced as livestock attain more significance in the farm organization since the contribution from the cropland becomes relatively less significant. However, the relationship between the cost of developing land and the general level of land values within a given area has a bearing on the extent to which the land will be rented or abandoned.

Farm Power

In the past there has been a period in the development of farms, particularly in the wooded areas, during which tractors could not be employed efficiently as a source of general farm power—the number of hours of use per year on these farms being so small that the cost per hour was much too high. Thus, at the time of this survey, only one in four, or 25 per cent of the farms, had tractors. Furthermore, since the initial cost of tractors was high in comparison with that of horses at a time when the supply of capital was usually quite limited, the average homesteader relied on horses as the source of power for the bulk of his farm work.

Tractors on the farms in the Bonnyville area had a value, on the average, of about \$600. Some of those who possessed tractors did custom work for neighbours in order to justify the investment. Considerable work was done by custom due to the fact that much heavy work had to be done during the initial stages of homesteading and, the tractor as the source of such power, had a definite advantage. Particularly in the matter of breaking land, greater power at a lower cost has been obtained through the use of tractors. The use of tractors in custom work was the answer to the very real problem of capital efficiency on small farms.

As has been pointed out, a serious handicap in carrying on commercial agriculture was the distances of the farms from the local market coupled with the condition of the road, and to this can be added inadequate means of transportation. Particularly was this true of those farms north of the Beaver River; their average distance from market was 15 miles and since only about one-fourth of these farms had either an automobile or a truck it meant that considerable time was being spent on the road.

The amount of cultivated land per farm, the type of power available, the condition of market roads and the location of markets—these are among the factors which affect the efficiency in the use of power on these farms. In pioneer areas the efficiency tends to be low due to the nature of the farm business.

The Rate of Farm Development

The absence of tree cover on the plains retarded the beginning of settlement westward but as soon as it had been demonstrated that the prairies would sustain settlement they were rapidly developed at comparatively low costs. In contrast to this rapid development of the prairies the areas in the parkland belt were difficult and costly to appropriate for agricultural purposes but, in spite of this people have been pushing Canada's agricultural frontier ever northward



Plate 3.—The cash outlay for rail fences is small. Such fences are still fairly common in the Bonnyville area.



Plate 4.—Stones have been an obstacle to the development of parts of the area in this region.

The wooded areas were settled at least partly because the opportunities for settlement on the prairies were being exhausted but there were other factors contributing to this movement northward. For instance, in the area under study here, the church has been actively engaged in establishing itself by means of selected immigration. A number of these recruits were obtained from areas of more impoverished soils and of population pressure in Quebec and elsewhere. In later years, also, Canadian authorities directed immigration toward these northern areas, particularly during the twenties and early thirties. Many of the settlers interviewed in this survey indicated that they had come to northeastern Alberta because they had friends there who had encouraged them to come. In addition, there were people who had a natural preference for the wooded regions of the country and furthermore, there have been times when it has seemed profitable to homestead with the purpose of selling the improved property.

Such motivating factors explain more than the mere population movement—they also provide a clue or a basis for interpreting the rate of progress made by the settlers. That is to say, one would not expect an individual who had come into a new area primarily for the purpose of trapping to make a sudden change in his plans and thenceforth devote his energies to land development. In addition to the motives stated above several others were given as: "roaming around, just happened to settle here"; "wanted to get away from the droughts of the prairies"—but practically all came with the objective of eventually becoming permanent settlers.

Clearing and Breaking Costs.—The costs of land improvement, that is, clearing, breaking, root-picking, and stoning bore no consistent relationship to the sale value of the land thus improved. As a matter of fact the opinion was widely expressed by the settlers that the costs of improvement exceeded considerably the sale value of the improved land. This is significant for its tendency to keep homesteading for purposes of land speculation to a minimum.

The relatively heavy bush cover was sometimes reduced through fires although burning was not used extensively as a means of clearing land. Much of the clearing in the Bonnyville area has been done by the family labour available on the farms. In instances where such clearing was done on contract the cost varied from \$2 to \$12 per acre, the variation in costs being due mainly to differences in land cover although such factors as the general price level and alternative opportunities for labour have contributed to this spread. Some clearing on contract was done by Indians but little by means of heavy machinery designed for that purpose. The brush cutter and bulldozer had not had any effect on the rate of land improvement but it was expected that such means would become available within a short time.

Breaking was done almost exclusively by horses until 1929 at which time there occurred a fairly rapid shift to the use of tractors on contract. Since breaking was heavy and difficult in this area the advent of the tractor constituted a definite improvement in method. Contract breaking circumvents to a large degree the necessity of farmers uniting for the purpose of procuring power breaking equipment and thus obviates some of the difficulties of community ownership. The costs have varied only slightly, the range being from \$5 to \$7 per acre with a tendency toward the \$5 figure.

The average cost of clearing, breaking, and picking roots per acre of land in the Bonnyville area during the fourteen-year period 1929 to 1942 was approximately \$15.

The Significance of Outside Sources of Income.—In the earlier days of settlement few homesteaders resided on their claim throughout the whole year. The practice was, more generally, to meet the residence requirements by remaining on the land in some sort of temporary dwelling during the summer months and then seeking employment elsewhere during the remainder of the year. Two reasons may be submitted to account for this—first, the public services and facilities for encouraging a family to live in the new area had not been established and, second, the capital necessary for farm improvement had to be found in areas which had greater means of production. Thus, at first, few families remained throughout the year and the employment sought was obtained far afield. But, as this area became established, more and more farmers within the district were able to provide the newcomers with employment. Once the beginning had been made the communities gradually became consolidated.

The sources of outside income differ then, depending somewhat upon the stage of development of an area. For instance, in the early days in the Bonnyville district, considerable amounts were obtained through trapping (Plate 5). Likewise at that time men went to work on railroads, in the mines, and in

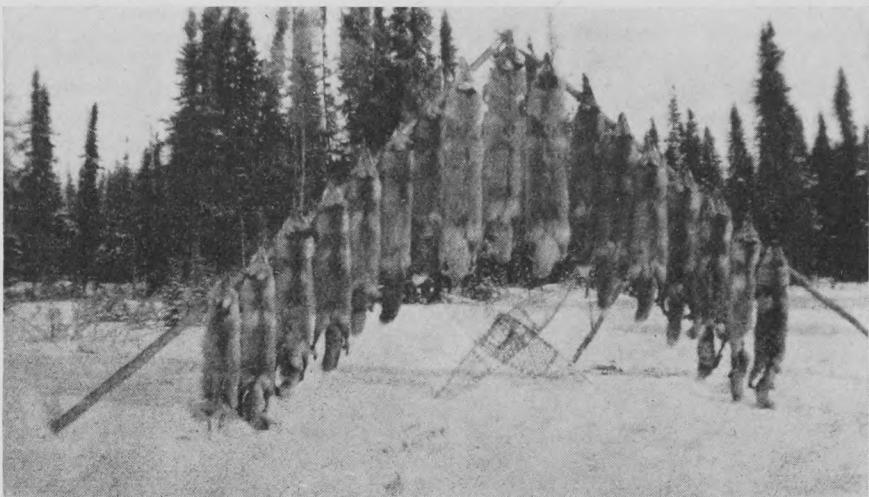


Plate 5.—Trapping has been an important source of outside income for many settlers. These pelts were obtained by a settler between December 1, 1942, and February 20, 1943, and were valued at \$1,200.

Edmonton and nearby towns.¹ More recently however such income has been obtained largely through seasonal employment on other farms as well as through wood-cutting and work on roads. Therefore the level of prosperity within the region has become a factor to be considered in its relationship to the provision of capital required by operators on the newer farms. And this has particular relevance in view of the extent to which other sources of capital have been beyond the reach of these people.

In a comparatively prosperous year such as the one dealt with in this study, "outside receipts" constituted only a small portion of the total.² During this year the bulk of the outside income was made up of sale of lands, and moneys which the children away from home were contributing. But the interviews revealed that over a period of years there was a direct relationship between the rate of farm development and the amount of outside income received by the operator.

Other Considerations.—The slow rate of development of the earlier days was speeded up somewhat during the thirties through the use of the tractor for breaking. A further advance will undoubtedly be made with the introduction of heavy clearing equipment.

The extent and rapidity of land improvement depend upon the profitability of such an undertaking. When hogs were being sold at one cent per pound in this area in 1932 there was little incentive from a commercial point of view to invest further in land development. On the other hand, in spite of the generally depressed national economy during those years some settlers reasoned that their best line of action was to develop the farms as rapidly as possible. Members of the family finding little or no employment elsewhere helped to clear the land. But the progress of improving the land was slow in comparison with what can be made with modern land clearing and breaking equipment. However, the fact remains that, in the consideration of the utiliza-

¹ One of the earliest settlers provided the following list of outside sources of income which he had tapped during his thirty-eight years in this area: labourer in the Nome gold-fields, Alaska; freighting with a team of oxen between Vegreville and St. Paul, Alta.; subdividing with a survey party near Lac La Biche, Alta.; logging and working in lumber mills in the Lake of the Woods country of Ontario; hod carrier in the City of Edmonton; auctioneer; and other available local jobs.

² Grain farms had an average of \$21 per farm from outside sources compared with \$176 on the Livestock farms. Falling between these two types the Mixed farms had \$98, the Off-type farms \$113, and the Subsistence farms \$151 from outside sources.

tion of up-to-date equipment for preparing raw land for the plough, the necessary capital must first be available either in the form of liquid assets or as credit. Because the working capital of the average settler has been limited and credit was to be had in only a few cases the rate of land improvement has been slow.

Climate

Climatalogical data for this region are scant. In general, the precipitation is adequate for the growing of fairly good crops but the growing season is short. Crops are frequently damaged by frost. There is a belief which seems to be well founded that as the land is cleared of the trees the frost hazard is lessened through improved circulation of air. But regardless of the effect of removing the forest cover the geographic location cannot be altered and this area will continue to have a comparatively short growing season. Hail damage occurs occasionally but larger losses are suffered due to frequent adverse fall weather conditions. Sometimes threshing is delayed until spring.



Plate 7.—The initial stages of farm improvement near Bonnyville, Alta.



Plate 8.—This homesteader is well on his way to becoming established. Note the heavy bush in the background.

Arability

The farm operators were asked to estimate the number of acres which could be broken on their respective quarters. Their estimates of arability revealed that there was a wide variation in the acreage which could be cultivated per quarter-section. Some quarters were entirely too stony to permit any cultivation except at an unreasonable cost; others were too low and swampy to permit cultivation. At the other extreme were those where the arability was 100 per cent, or 160 acres per quarter.

North of the Beaver River, about 27 per cent of the acreage in farms was non-arable. South of the Beaver the corresponding figure was 23 per cent. On an average about 76 per cent of the land in farms in the Bonnyville area was arable although only 35 per cent was actually being cultivated. By their own estimates therefore the acreage under cultivation could be more than doubled within the existing farm boundaries.

Present Land Utilization

In the twelve townships included in this study 35 per cent of the area was not cultivated, only 9 per cent had as much as 97 acres per quarter-section under cultivation (that is 60 per cent), and only 4 per cent had a cultivation of 129 acres or more, that is, 80 per cent per quarter-section (Figure 3).¹

The highest concentration of cultivated land per quarter-section occurred on the better soils, largely in township 61, ranges 4, 5, and 6 (Figure 3). On the poorer soil, namely the grey wooded, it was seldom that as much as 60 per cent of the quarter-section was cultivated. On the average, the size of farm as measured by the total acres operated per farm was quite similar for all types of farms except the Subsistence type.² The Subsistence farms had only 38 acres under cultivation while the other types had from 102 to 122 acres under cultivation (Table 8). The acreage seeded to wheat was greatest on the Grain farms, being 54 acres, but some wheat was grown on all types. In the Bonnyville area, where wheat seldom commands the higher grades, it is being used rather extensively for feeding, particularly to hogs and poultry. Its popularity has increased since it has been learned that it is a satisfactory livestock feed, and in addition, in recent years only a limited amount has been marketable in a more direct way.

An average of five to six acres of tame hay, mostly alfalfa and sweet clover, was grown on the Mixed and Livestock farms. No specialty crops were grown in the area with the one exception that alfalfa seed production had become an important source of income for the district.³ By and large, however, the cultivated land was being used almost exclusively for grain production, the grain being marketed partly through the cash market but mainly through the feeding of livestock.

Although much of the grain produced was being fed to livestock in this area it may be expected to continue to occupy the bulk of the cultivated acreage for some time to come for other reasons, among them the following:—

(1) The fertility of most of these soils remains at a level adequate for the production of reasonably good grain crops for about ten years after breaking.

¹ Cultivation data obtained by permission of the Wheat Acreage Reduction Branch of the Dominion Department of Agriculture. Calculations based upon total area of the twelve townships minus some 16,000 acres taken up by lakes.

² Livestock farms were those where most of the income was derived from livestock, Mixed farms received about equal amounts from grain and livestock while Grain farms derived almost all their income from grain. Off-type farms emphasized neither grain nor livestock production but obtained almost one-half of the income from sources other than grain and livestock, mainly from custom work and the sale of alfalfa seed. A few were classified as Subsistence farms. These showed only a limited development.

³ About 200,000 pounds of alfalfa seed were shipped out of the St. Paul-Bonnyville area during 1942.

PATTERN OF CULTIVATION
BONNYVILLE AREA-ALBERTA-1941

□ No cultivation ▨ 35 to 64 acres ■ 97 to 128 acres

▨ 32 acres or less ▨ 65 to 96 acres ■ 129 acres plus

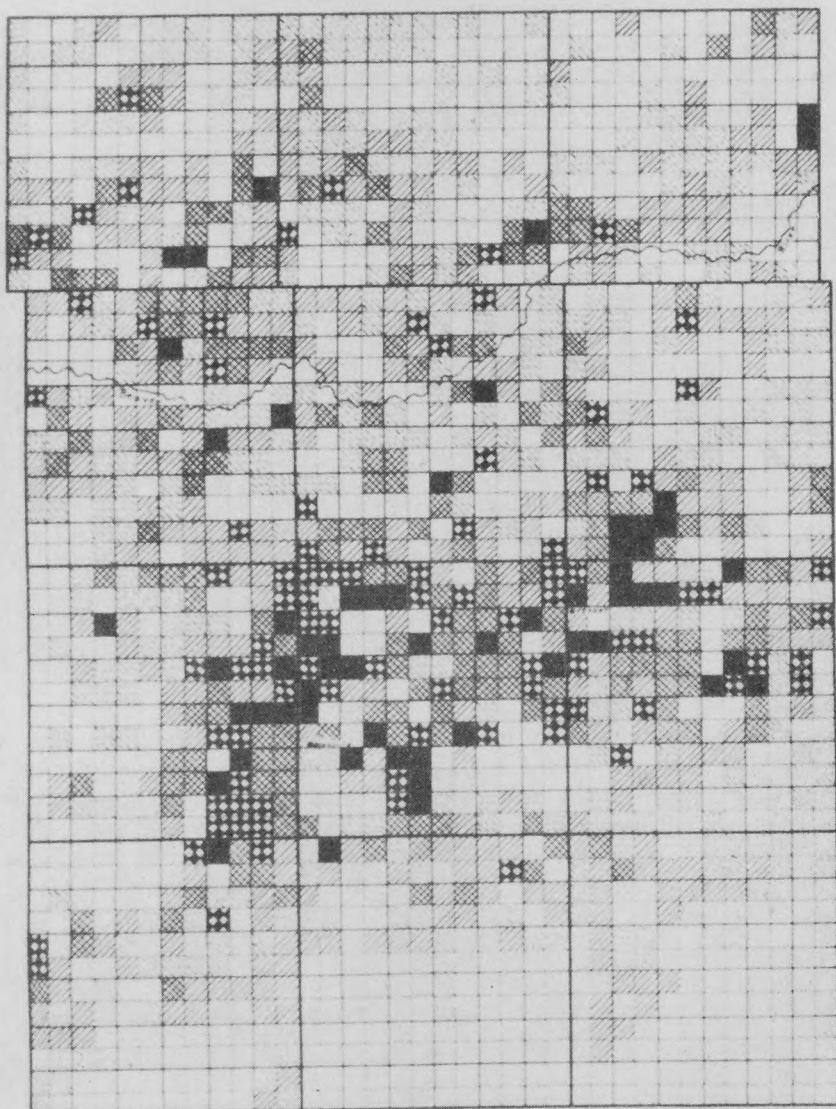


FIGURE 3

TABLE 8.—LAND UTILIZATION ON FIVE TYPES OF FARMS, BONNYVILLE AREA, ALBERTA, 1942 TO 1943

	Farm Type				
	Livestock	Mixed	Grain	Subsistence	Off-type
	Ac.	Ac.	Ac.	Ac.	Ac.
Total acres operated per farm.....	310	314	327	239	307
Wheat.....	24	36	54	10	23
Oats.....	31	28	23	8	15
Barley.....	19	19	8	8	17
Tame hay.....	6	5	1	1	1
Other crops.....	6	5	—	3	16
Summerfallow.....	15	23	14	4	9
Breaking.....	4	6	6	4	9
Idle.....		1	—	1	—
Total acres cropland.....	105	122	106	38	102
Number of farms.....	48	87	7	20	13

(2) While this area has been settled for more than ten years, it is as yet in the developmental stage and consequently additional land is broken and cultivated each year.

(3) Soil improvement crops are being more widely grown. Recently alfalfa has become quite popular for its value is being recognized as a high protein feed and as a cash crop in seed production.



Plate 6.—Alfalfa grown for seed on forty acres of degraded black soil near Bonnyville, Alta., 1943. The yield was excellent.

In the production of crops the most striking feature of this district is the current interest in alfalfa seed. On the whole the production of alfalfa seed has met with considerable success here and it may be expected for a few years at least that the farmers will include in their cropping plan some alfalfa for seed as a cash crop. In 1943, north of the Beaver River, 34 per cent of the farmers were growing some alfalfa, averaging 8.5 acres per farm (for those who had alfalfa). This was grown largely as fodder. South of the Beaver, 54 per cent of the farms had alfalfa (an average of 9.3 acres per farm) with a considerable acreage being grown for seed. The extent to which alfalfa can be grown for its seed remains to be seen but at present it has aroused considerable interest.

Financial Progress of the Settlers

Perhaps the most satisfactory measure of the financial progress of the settlers is the change in net worth since undertaking the operation of the farms. The net worth at any given moment of time is the difference between the assets and liabilities at that time. Thus the change in a settler's net worth since assuming the operation of a farm was the difference between his net worth when he started and his net worth at the end of the crop year, 1942-43.

The settlers were asked to put a value on their assets based on what they thought would be a reasonable value if offered for sale.¹ On the basis of the estimates obtained from the settlers the average yearly gain in net worth for those farms located south of the Beaver River was approximately \$330. North of the Beaver the increment was somewhat less—being about \$290 per year. These estimates apply to those settlers in the Bonnyville district who either purchased their farms or obtained title to them as homesteads.

The settlers had an average net worth of \$690 when they undertook the operation of these farms. Many began with no capital whatsoever while about 8 per cent had a net worth exceeding \$2,000. About two-thirds of the present operators had an initial net worth of \$500 or less. At the time of this survey the average net worth of all homesteads and purchased farms had increased to about \$6,000 per farm representing a gain of something over \$5,000 per farm. This increment was obtained during a term averaging 17 years.

PART II

THE FARM BUSINESS

Types of Farming

The organization of farms varies from one area to the next, and even within small areas themselves variations occur. The farms included in this study were classified according to type of organization into five types: Livestock, Mixed, Grain, Subsistence, and Off-type.

Livestock farms were those deriving the bulk of their income from livestock; Mixed farms received about equal amounts from grain and livestock; while Grain farms derived almost all their income from the sale of grain. Subsistence farms were those which showed only a limited development, their production being used mainly in the home. Finally, a number of farms, while showing considerable development, obtained almost one-half or more of their income from sources other than from the production of grain and livestock. These were classified as Off-type.

The majority of farms were of the Mixed type, since the area is best adapted to this type of farming. But in addition to the normal tendency toward mixed farming the business year under study here may indicate a larger proportion of receipts derived from livestock than would have been the case in more normal times. Due to the favourable conditions for hog production on the one hand and the difficulty encountered in disposing of the grain on the cash market on the other, undoubtedly, more livestock feeding was being carried on than the long-term trend would indicate.

Measures of Income Defined

As an indication of the success of the year's business operations three measures of income were used in this study. *Labour Income* is a useful measure in comparing the success of farms from one area to another since it takes

¹ See section entitled, "The Capital Structure and Present Net Worth".

account of the amount of family labour, that is, the farm business is charged with the family labour used. *Operator's Labour Earnings* gives the business credit for the farm perquisites provided to the operator and his family and thus provides a measure more comparable to the wage earner's salary. But it is interesting to know also what these farms provide as a surplus on the year's business to retire debts and for savings. For this purpose the term *Family Net Income* or *Surplus* is used.

More specifically Labour Income is the difference between receipts and expenses after an adjustment has been made for changes in the capital account¹ and a deduction of 5 per cent on the average capital investment has been made.

Operator's Labour Earnings is a measure derived by adding to Labour Income the value of the farm perquisites utilized by the family. This credits the farm with the value of products produced and used on the farm along with an estimated rental value of the house.

The Family Net Income or Surplus is the amount left at the end of the year's business for savings or retiring debts. No deduction for interest on average capital is made in this case. It is the difference between receipts and expenses, adjusted for the net changes in the capital account, a deduction being made also for cash living expenses incurred by the family during the year.

The Extent of Crop and Livestock Production

At the time this study was made most farms in the Bonnyville area received one-half or more of their total returns from livestock (Table 9). These were of the Mixed and Livestock types and carried 15 or more productive animal units per farm.

TABLE 9.—THE EXTENT OF CROP AND LIVESTOCK PRODUCTION ON FIVE TYPES OF FARMS IN THE BONNYVILLE AREA, ALBERTA, 1942 TO 1943

	FARM TYPE				
	Livestock	Mixed	Grain	Subsistence	Off-type
Acres cropland per farm..... Ac.	105	122	106	38	102
Productive animal units per farm ¹ .. No.	22	15	3	8	11
Animal units per 100 acres cropland ² . No.	33	20	7	40	21
Returns from crops..... \$	416	702	949	110	948
Returns from livestock..... \$	1,600	996	129	504	800
Proportion of livestock returns derived from hogs..... %	63	71	84	48	60
Number of farms..... No.	48	87	7	20	13

¹ Based upon feed requirements, for the purpose of bringing all types of livestock to a common unit of measurement, the following conversion factors were used: one animal unit=1 horse, 2 colts kept throughout the year, 3 colts born during the year, 1 cow, 2 heifers, 2 steers, 3 calves, 7 ewes or rams, 14 lambs raised to market weight, 6 sows or boars, 5 pigs raised to market weight, 100 head chickens. Productive livestock was all livestock excluding horses.

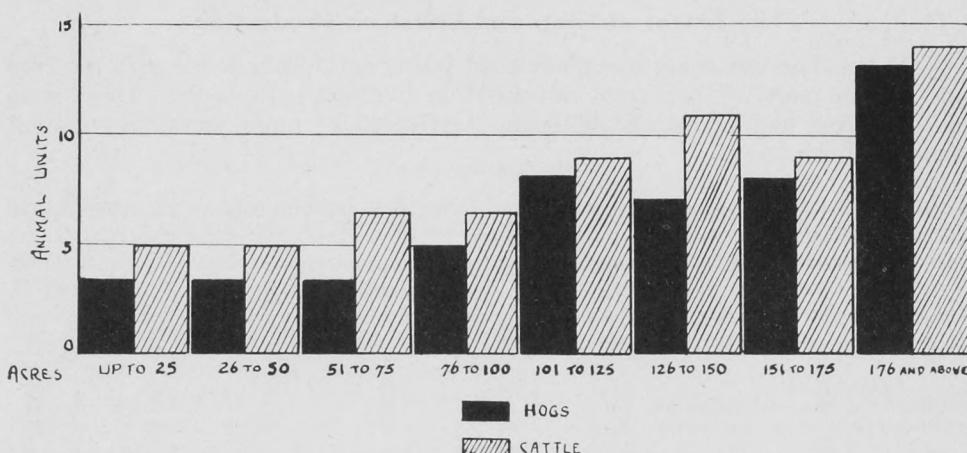
² This measure is not a satisfactory measure in comparing the livestock enterprise of one group of farms with that of another where there is a large variation in the number of cultivated acres per farm.

The Grain and Livestock farms had approximately equal amounts of cropland but, while the former had only three productive animal units per farm, those in the latter group carried 22. The Mixed farms had the largest acreage of crops per farm but the fact that they had higher returns from crops than the Livestock farms did not compensate fully for the smaller number of productive animal units on the farms of the Mixed type.

¹ The net change in the capital account is equal to the expenditure on new capital plus the change in inventory during the year.

The small acreage in crops on the Subsistence farms accounts for the comparatively large number of animal units per 100 acres of cropland. However, within the other three groups a consideration of the two measures—productive animal units per farm and animal units per 100 acres of cropland—provides a good indication of the intensity of the livestock enterprise. A further comparison of the extent of crop and livestock production¹ may be obtained from an examination of the returns from these enterprises. The returns from livestock on the Livestock farms amounted to \$1,600; \$996 on the Mixed farms; and \$129 on the Grain farms. The bulk of these returns was derived from the hog enterprise and the comparative success of the Livestock farms may be attributed therefore to the profitability of hog production.

There was an association between the acreage under cultivation and the numbers of productive animal units kept on farms in this district (Figure 4). It may be seen also that as the acreage under cultivation became larger the accompanying increase in cattle and hog production was such that the numbers of these two types of livestock remained in much the same proportion one to the other.



THE NUMBER OF ANIMAL UNITS OF HOGS AND CATTLE ON FARMS IN
RELATION TO ACRES UNDER CULTIVATION PER FARM - BONNYVILLE
AREA OF ALBERTA, 1942-43

FIGURE 4

The numbers of livestock on each type of farm are indicated in Table 10. The cattle population was made up almost entirely of dual-purpose cattle being maintained for butterfat production and the provision of meat. Practically no sheep were reported although farmers here and there were experimenting with limited numbers. Poultry likewise were of less importance in the average farm organization than other enterprises. But at the present time hogs and dairy cattle are the main types of livestock found in this district.

¹ "Returns" as found in Table 9 include in addition to sales the inventory increases or deduction for decreases and the value of the farm produce used by the family.

TABLE 10.—THE NUMBER OF ANIMAL UNITS OF EACH KIND OF LIVESTOCK KEPT ON FIVE TYPES OF FARMS IN THE BONNYVILLE DISTRICT OF ALBERTA, 1942 TO 1943

Kind of Livestock	FARM TYPE				
	Livestock	Mixed	Grain	Subsistence	Off-type
	No.	No.	No.	No.	No.
Horses.....	5.8	5.8	3.5	3.6	4.9
Cattle.....	11.7	7.4	1.8	4.7	6.6
Sheep.....	.2	.1	.....	.8	.....
Hogs.....	9.6	6.7	1.2	2.3	4.5
Poultry.....	.6	.5	.3	.4	.4
Total animal units.....	27.9	20.5	6.8	11.8	16.4
Number of farms.....	48	87	7	20	13

Hog Production¹

In this survey special study was made of the hog enterprise on 164 farms carrying two sows or more. The significance of the hog enterprise on farms in the Bonnyville area has been discussed elsewhere in this report but some of the more important aspects of hog management will be discussed here.

Feeding.—All producers fed skim-milk. Moreover, the importance of supplementing further the protein in the ration has been realized, at least to some extent, by most producers and it should be remembered that these farms were carrying two sows or more, making the supply of skim-milk available for hog feeding quite limited in most cases. Approximately two-thirds of the farms were following the practice of feeding other protein supplements. The amount or adequacy of the feeding of protein supplements was not determined but it was evident that many have realized the importance of protein balance in improved feeding practice.

Certain minerals such as lime and iron are often required for growing pigs in greater amounts than available in the farm grains. A conscious effort to make up the deficiency of such minerals was being made by the majority of producers. Seventy-one per cent were feeding either lime, coal or both coal and lime in addition to salt, and of the remaining 29 per cent feeding neither coal nor lime, one-half were using a complete commercial supplement. Forty-seven per cent were supplying reduced iron to the young pigs in an effort to prevent anaemia.

Two other aspects of feeding were considered—that of providing the sows with iodine and of including cod liver oil in winter rations. It was found that 25 per cent were supplying potassium iodide and nearly all the remainder were providing iodine to some degree through the use of iodized salt, and, as a result hairlessness of pigs was uncommon. On the other hand only about one in five included cod liver oil in the ration.

The use of some seeded pasture was noted in practically all cases but only about 20 per cent grew legumes for this purpose. This was to be expected since alfalfa is a relatively new crop in this district. Seeded pasture, other than legumes, was generally of a cereal grain type.

Housing.—Housing was the least satisfactory aspect of swine management in the Bonnyville district (Table 11). Only a few of the larger hog-producing farms were found to have insulated and well ventilated hog houses. In no

¹ For further details see B. H. Kristjanson and J. L. Anderson, "Hog Production in Northeastern Alberta", *The Economic Annalist*, November, 1943.

instance where less than six sows were kept was ideal housing to be found and, in general, the frame and log structures which were not insulated were unsatisfactory. The heavy losses in young pigs encountered during the spring of this year were associated to some extent with inadequate housing.

TABLE 11.—TYPES OF HOUSING FOR SWINE IN THE BONNYVILLE DISTRICT,
ALBERTA, 1943

	Size of Enterprise		
	2 to 3 sows	4 to 5 sows	6 sows or more
	%	%	%
Log or frame, insulated and ventilated.....			22
Frame, not insulated.....	12	26	25
Log, not insulated.....	41	33	22
Temporary straw.....	26	19	28
Use of main barn.....	21	22	3
Total.....	100	100	100

Winter Farrowing.—Most producers have attempted to raise two litters per year but only a relatively small proportion found it feasible to farrow sows during January or February. The most common practice has been to have spring and fall litters. As was to be expected, more winter farrowing was found in districts where farms had been established longer and were beyond the pioneer stage of development. Twenty-five per cent of these farms carried out some winter farrowing while in the more recently settled districts the corresponding figure was 16 per cent.¹ Results from winter farrowing are unsatisfactory where housing facilities are inadequate.

Age at Marketing.—The majority of the farmers in this district finished their hogs for market in approximately seven months. A few obtained even better results. It appeared that the larger producers provided better housing, fed more carefully, and carried better breeding stock than the smaller producer.

The Dairy Enterprise

During the past few years in particular dairy production in this region has increased noticeably. The milk was marketed as churning cream as no cheese factory was located within reach of these farms and the absence of large population centres within a reasonable distance precluded the possibility of shipping whole milk.

As yet there has been practically no specialization in dairying. About 91 per cent of the farms carried less than 10 milch cows. The remaining 9 per cent had an average of 14 cows, the numbers ranging from 10 to 26 head but even here other enterprises were carried on giving revenues as large as from dairy produce. The sales of dairy produce in this latter group amounted to \$390 per farm and with the exception of two farms the sales were less than \$525.

These 15 farms having 10 milch cows or more were considerably larger than the average for the area. The total acreage operated was 532 acres per farm with an average cultivation of 332 acres. In addition, about 16 animal units of hogs were kept. As a result of the comparatively large output of the farm unit the earnings of these farms were well above the average, the Operator's Labour Earnings amounting to \$1,560 per farm.

¹ These percentages apply to the number of farms and not to the proportion of the total number of sows.

Although less important than the production of grain and hogs, dairying had a definite place in the farm organization. Thus, in considering the significance of the dairy enterprise, the following factors should be kept in mind: (1) that in addition to the sale of dairy products the dairy contributed to the farm income through the provision of milk, cream, butter, and meat; (2) that considerable pasture was available and thus this otherwise unmarketable product of the poorer land found a market; and (3) that the dairy made it possible to utilize more fully the farm labour supply.

Farm Operating Statement by Type of Farm

The Livestock, Mixed, Grain, and Subsistence types are treated first in this report while the Off-type farms are considered later because they represent situations which are better treated apart from the more typical farms. The more important aspects of the business on farms in the Bonnyville area will be dealt with next.

Sources of Receipts.—The total farm receipts varied from \$580 on the Subsistence farms to \$1,751 on the Livestock farms (Table 12). As noted above a large proportion of the livestock sales was derived from hogs. The sales of other farm products were made from dairy and poultry products. Receipts from work on other farms were negligible on most farms but nevertheless were significant on the Subsistence farms. Work done by custom was significant on only a few farms although some custom work was done on all types.

TABLE 12.—SOURCES OF RECEIPTS ON FOUR TYPES OF FARMS, BONNYVILLE AREA, ALBERTA, 1942 TO 1943

	Farm Type ¹			
	Livestock	Mixed	Grain	Subsistence
	\$	\$	\$	\$
Crop sales.....	182	337	689	52
Livestock sales.....	1,110	692	103	258
Sale of other farm products.....	328	133	14	110
Outside farm labour.....	50	43	.....	86
Custom work.....	19	48	96	47
Other farm receipts.....	62	83	77	27
Total farm receipts.....	1,751	1,336	979	580
Number of farms.....	48	87	7	— 20

¹ Off-type farms dealt with later in this report.

Current Operating Expenses.—The main current operating expenses are listed below in Table 13, a number of the smaller items being grouped together in 'other expenses'. The small expenditures for feed indicate that practically all the feed fed to livestock was grown on the farms. It is evident, too, that the threshing was done entirely by custom since the combine and separator costs were practically nil. This was to be expected as the cultivated acreage on these farms was too small to warrant the investment required for the possession of such equipment on each individual farm. Most of the hauling was done by horses; therefore, truck and automobile expenses were quite low, considering the comparatively long distances which had to be travelled to market. The costs of operating the tractors were incurred to a large extent in breaking land although some cultivation and other field work were done with tractor power.

TABLE 13.—CURRENT OPERATING EXPENSES ON FOUR TYPES OF FARMS IN THE BONNYVILLE AREA, ALBERTA, 1942 TO 1943

	Farm Type ¹			
	Livestock	Mixed	Grain	Subsistence
Taxes on real estate.....	\$ 66	68	80	32
Feed purchased.....	69	36	.....	39
Repairs to buildings, wells and fences.....	32	20	3	8
Tractor costs.....	41	50	54	16
Combine and separator costs.....	.....	3	.....	.....
Truck, automobile farm use.....	36	22	17	13
Equipment repairs.....	36	38	44	14
Custom work.....	202	198	183	62
Paid labour (including cash board).....	120	64	42	16
Other expenses.....	156	115	84	62
Total cash expenses.....	758	613	507	262
Value of unpaid labour ²	162	168	72	106
Total farm expenses.....	920	781	579	368
Number of farms.....	48	87	7	20

¹ Off-type farms dealt with later in this report.

² The operator was asked to estimate the number of man months of unpaid family labour which had been utilized. The value of this labour was considered equivalent to that of the prevailing farm labour wage in the district. This was \$40 per month plus board.

The Earnings of Four Types of Farms.—The Livestock farms yielded the largest returns on the year's business. They showed a Labour Income of \$602 as compared with \$454 on the Mixed farms and \$220 per farm on the Grain farms (Table 14). The Operator's Labour Earnings were almost two and one-half times as great on the Livestock farms as on the Grain type. The cash family living expenses were only \$474 per farm on the Grain type, \$582 on the Mixed Farms, and \$718 per farm on the Livestock type. Furthermore the Grain farms had only \$13 left at the end of the year's business to meet indebtedness or for savings. This is described as family net income from farm. With funds earned off the farm, or non-farm income, the total surplus above cash living costs amounted to \$44. The corresponding figure for the Livestock farms was \$538. For the Subsistence farms the family net income or surplus above operating, capital maintenance, and family living costs averaged \$23, which with \$151 of non-farm income gave a total of \$174 available for paying debts and for savings.

The Capital Structure and Present Net Worth.—One of the prime motivating factors in the settlement of undeveloped areas is the availability of land at little or no initial cost. People of limited means have often availed themselves of the opportunity of becoming landowners through the process of homesteading. But, in the Bonnyville area as in other woodland areas of Western Canada, the improvement of these holdings has been both difficult and costly and it was to be expected therefore that the capital investment per farm would still be somewhat below that of the farms on more accessible land on the prairies. By virtue also of the disadvantages of the geographic location of this area the value of improved land has tended to be lower regardless of the costs of improvement.

The total capital investment per farm, that is, the estimated value of real estate, livestock, machinery, feed, seed and supplies amounted to \$6,515 per farm on the Livestock farms as compared with \$4,181 on the Grain farms (Table 15). The value of land and buildings accounted for 54 per cent of the total capital investment on the Livestock farms compared with 65 per cent on the Grain farms but the investment in livestock on farms in the former group

TABLE 14.—OPERATING STATEMENT, FOUR TYPES OF FARMS, FOR YEAR ENDING APRIL 30, 1943

	Farm Type ¹			
	Livestock	Mixed	Grain	Subsistence
Number of farms.....	48	87	7	20
Cash farm receipts.....	\$ 1,751	\$ 1,336	\$ 979	\$ 580
Net increase in inventory.....	608	613	235	188
Total receipts.....	2,359	1,949	1,214	768
Cash farm expenses.....	758	613	507	262
Capital expenditures.....	521	417	220	105
Total cash expenses.....	1,279	1,030	727	367
FAMILY INCOME FROM FARM.....	1,080	919	487	401
Cash living expenses.....	743	590	482	382
Less cash board of paid labour.....	25	8	8	4
Cash family living expenses.....	718	582	474	378
Family net income from farm.....	362	337	13	23
Cash receipts non-farm.....	176	98	21	151
FAMILY NET INCOME FROM ALL SOURCES.....	538	435	44	174
Family income from farm.....	1,080	919	487	401
Value of unpaid labour and board.....	162	168	72	106
Interest on capital.....	316	297	195	149
Total unpaid labour and interest.....	478	465	267	255
OPERATOR'S LABOUR INCOME.....	602	454	220	146
Perquisites to operator.....	423	346	180	293
OPERATOR'S LABOUR EARNINGS.....	1,025	800	400	439

TABLE 15.—THE CAPITAL STRUCTURE AND PRESENT NET WORTH OF FOUR TYPES OF FARMS, BONNYVILLE AREA, ALBERTA, 1942 TO 1943

	Farm Type ¹			
	Livestock	Mixed	Grain	Subsistence
Real estate.....	\$ 3,458	\$ 3,638	\$ 2,717	\$ 1,770
Livestock.....	1,526	1,182	354	768
Machinery.....	1,135	1,143	822	540
Feed, seed, and supplies.....	396	423	288	103
Total capital investment per farm.....	6,515	6,386	4,181	3,181
Total assets.....	7,261	6,778	4,517	3,369
Total liabilities.....	203	623	401	349
Net worth.....	7,058	6,155	3,916	3,020
Number of farms.....	48	87	7	20

¹ The farms classified as "Off-type" will be treated later in this report.

was considerably greater. In areas of low land values the proportion of the total capital investment in real estate is generally lower than in better areas and the Bonnyville district proved no exception to this rule. This situation was further accentuated due to the tendency to keep investment in buildings at a minimum. Buildings were, in most cases, of log construction, their estimated value being \$1,350 per farm on the Livestock farms, \$1,180 on the Mixed farms, \$821 and \$590 on Grain and Subsistence farms respectively. By keeping the investment in buildings at a minimum a correspondingly greater amount has been available for the purchase of machinery and for breaking more land or for other purposes.

Reference was made earlier in this report to the gain in net worth of the settler since commencing to operate on his present farm. The estimated present net worth of the settler by farm types is given in Table 15. For the Livestock group this averaged about \$7,000, for those in the Mixed group a little over \$6,000 and for those in the Grain and Subsistence group the estimated net worths averaged about \$4,000 and \$3,000 respectively.

Off-Type Farms.—A number of farms, about 7 per cent of the total number, were classified as 'Off-type.' They were treated separately due to either one of two characteristics of the business. (1) The operators derived the major portion of their income from custom work such as threshing or breaking land, or (2) they were emphasizing the production of alfalfa seed almost to the exclusion of other enterprises.

These farms had an average of 102 acres of cropland and 12 productive animal units. The total capital investment per farm was almost as high as in the Livestock and Mixed groups, being \$5,937. The value of machinery and equipment amounted to \$1,547 per farm.

As a group, the Off-type farms showed slightly better returns on the year's business than did any other group. The average Labour Income for these farms was \$770 with Labour Earnings of \$1,124. The expenditures on family living were also highest for this group being \$736 and, in addition to this a Farm Surplus of \$523 was available for the retirement of debts or for savings.

The success of those farms deriving the bulk of their income from custom work was due to the greater efficiency in the use of labour and capital. The farms emphasizing alfalfa seed production, on the other hand, profited by good yields and a favourable price for the product. It was difficult to foretell to what extent the production of alfalfa seed as the main cash crop would replace the growing of grain but, in view of the extreme variability in prices and yields which have prevailed in the past, it seemed reasonable to expect that on the majority of farms in this area alfalfa seed production will continue only as a supplementary cash crop.

The Effect of Size of Business on Farm Income

During the crop year, 1942 to 1943, the differences in the success of the business on farms in the Bonnyville area depended mainly on the variation in two factors: (1) the number of acres under cultivation and (2) the number of productive animal units per farm.

All types of farms were grouped according to the number of productive animal units kept per farm and these groups were then divided further on the basis of the extent of the cultivated acreage found on these farms (Table 16). As would be expected the higher incomes were associated with the larger operations.

TABLE 16.—THE EFFECT OF SIZE OF BUSINESS ON FARM INCOME, BONNYVILLE AREA, 1942 to 1943

	Number of Farms	Acres Cropland	Productive Animal Units	Operator's Labour Earnings	Family Income Farm	Cash Living Costs	Surplus above Cash Living Costs
	No.	Ac.	A.U.	\$	\$	\$	\$
10 Productive Animal Units or less—							
Cultivation: 100 acres or less.....	51	54	7	608	532	398	134
101 to 175 acres.....	10	129	8	277	403	511	-108
176 acres or more.....	.....	.....	.....	.....	.....	.....	.....
11 to 20 Productive Animal Units—							
Cultivation: 100 acres or less.....	39	61	15	737	749	555	194
101 to 175 acres.....	33	134	16	878	980	628	352
176 acres or more.....	10	216	16	1,188	1,542	726	816
21 Productive Animal Units or more—							
Cultivation: 100 acres or less.....	2	82	22	* 1,297	1,274	532	742
101 to 175 acres.....	18	133	28	1,326	1,536	867	669
176 acres or more.....	12	244	38	1,280	1,802	1,151	651
Average of all groups.....	175	106	15	830	914	603	311

In the group of farms having the smallest number of productive animal units, income was low. In fact, the labour earnings of those farms with 101 to 175 acres of cropland averaged only \$277, and they failed by over \$100 to meet current operating, cash living, and capital maintenance costs. The grain crop was adversely affected by poor harvest weather, which was more serious on the grain farms than on farms which carried substantial livestock enterprises.

In contrast to the group of farms with few productive animal units, the farms having from 11 to 20 productive animal units per farm earned greater incomes as the acreage under cultivation was increased. Here the Operator's Labour Earnings increased from \$737 to \$1,188 as the cultivated acreage increased from an average of 61 acres to 216 acres per farm. The progression in the Farm Surplus was even more pronounced. This trend is representative of what would be expected in an area of mixed farms.

The relative effect of these two factors on farm income varies from one year to the next depending upon climatic and price conditions. During the year of this study the farmers in this area experienced considerable difficulty in harvesting their grain crops—the grain in many instances was either not threshed at all or else it was threshed during the spring. The market price of grain was below the long-term average. On the other hand livestock prices were above normal.

As noted above, Table 16 includes all farms covered by this study. The effect of an increase in size of business varied. In the following tabulation (Table 17) farms of the livestock type only are included and here the effect of increasing the size of business showed a more consistent trend. The Operator's Labour Earnings increased from \$623 on farms having 15 productive animal units or less to \$1,420 per farm where 26 or more productive animal units were kept. The farm surplus and cash living expenditures increased from an average of \$553 to \$1,739 per farm.

The Bonnyville district will likely remain an area of mixed farming due to its comparative advantage in the production of coarse grains and fodder crops.

TABLE 17.—THE INCOME ASSOCIATED WITH INCREASED NUMBERS OF PRODUCTIVE LIVESTOCK, BONNYVILLE AREA, ALBERTA,
1942 TO 1943

	Productive Animal Units		
	15 or less	16 to 25	26 or more
Productive animal units per farm.....	No.	12	20
Acres cropland per farm.....	Ac.	53	104
Operator's Labour Earnings.....	\$	623	1,100
Family Income from farm ¹	\$	553	1,420
Number of farms.....	No.	16	19
			13

¹ Does not include value of products produced and consumed on the farm or the use of the house.

Earnings of Two Types of Soil Compared

A large proportion of the future land settlement in Alberta will take place on the grey wooded soils. Currently therefore, a great deal of interest is manifest in the probable capacity of these soils for agricultural production.

The farms where the soil was predominantly either black or grey were divided into the two soil groups. The farm on the black soil had an average of 136 acres under cultivation and 19 productive animal units in comparison with 103 acres of cropland and 14 productive animal units on farms located on grey wooded soil (Table 18). While the earnings as indicated in the family income from the farm exclusive of perquisites were somewhat higher for farms on the

black soils, they were no more so than could be expected in view of the comparatively larger sized business on the average. The labour incomes were practically the same due to the higher interest charge on the more valuable and therefore more highly capitalized farms of the black soils.

TABLE 18.—A COMPARISON OF FARM RETURNS ON TWO SOIL TYPES IN THE BONNYVILLE AREA, ALBERTA, 1942 to 1943

	Soil Type	
	Black	Grey wooded
Total acres operated.....	Ac.	301
Acres cropland.....	Ac.	136
Productive animal units.....	A.U.	19
Family income from farm ¹	\$	1,051
Operator's labour income.....	\$	465
Operator's labour earnings.....	\$	862
Number of farms.....	No.	43
		82

¹ Does not include value of farm products produced and consumed on farm or use of house.

It is reasonable to conclude that on equivalent sized units there was no significant difference in the average incomes of farms on black and farms on grey soil. There are two possible explanations for this: first, the farms on the grey wooded soil were settled so recently that no appreciable decline in crop yields had taken place; second, livestock enterprises formed such a large part of the farm businesses that the effect of soil type on income was smaller than would have been the case if livestock had formed a smaller part in the economy of the farm organization.

It must be noted too, that while a group of farms were predominantly on either the black or the grey soil, the mixture of the black and grey soil in the cultivated portion of some farms tended to offset pronounced differences in productivity which might have been shown if the farm land had been wholly of one soil class. Frequently it happens that in areas fairly uniform for grey wooded soils, pockets of black soil occur. Usually found in lower depressions, these could not be isolated from the rest of the farm predominantly of grey wooded soil in the study of the production and income of the farm as a whole.

Minimum Farm Unit Recommended for the Bonnyville Area

From this study it appears that a minimum farm unit which should be recommended for areas similar in physical characteristics, climate, and location in respect to markets, to Bonnyville would consist of about 134 cultivated acres with about 16 productive animal units. This would require the full attention of one man plus an additional 4·5 months of hired or family labour per year.

The capital structure of such a unit could be visualized from the average of the 33 farms in the group having from 11 to 20 productive animal units and cultivating from 101 to 175 acres (Table 16). These farms, on an average, had 16 productive animal units and 134 acres under cultivation. The distribution of the capital investment was found to be as follows

Owned real estate.....	\$3,390
Livestock	1,406
Equipment	1,419
Feed and Supplies	501
Seed	123
Other assets	562
Total, per farm	\$7,401

On the basis of the prices received for farm products during the period, 1914 to 1942, such a farm would have a farm surplus of \$352 per year after allowing \$628 for cash living expenses. This surplus of \$352 would meet interest charges at 5 per cent on the \$6,215 invested in land, buildings, machinery, and livestock.

A greater surplus for retiring debts, for savings or for a better living would be made possible with additional acreages under cultivation. It is physically and economically possible to improve more land on the average half-section farm according to the statements of the farmers themselves.

PART III

THE LEVEL OF LIVING

Up to this point little has been said about conditions of life in the area under study. Yet, in the final analysis, as the peoples of the world acquire more economic independence, their choice of vocations will become increasingly sensitive to the level of living which they associate with the opportunities available to them. And, is it not reasonable to expect that the nation will become more concerned about the sociological aspects of the pioneer areas, particularly if it could be demonstrated that with reasonable financial assistance at least some of the sacrifices which have heretofore been made in the level of living in order to accumulate working capital could be avoided?

The financial circumstances of the settlers upon arrival in the Bonnyville area varied somewhat but the majority had less than \$500 with which to make a start. Depending upon their initial financial resources, general economic conditions, their own resourcefulness and initiative and a number of other factors these people have, during a period of from fifteen to twenty years, developed reasonably satisfactory farm units.

What were the living conditions in the Bonnyville area at the time of this survey and how did they compare with conditions in parts of the province which are older and more fully developed agriculturally? In order to bring out the more salient differences between a newly developed region of the pioneering fringes and one which has reached a high stage of development, a comparison was made between two such areas in the matter of a few of the household conveniences, as well as in some of the cultural aspects of the home. The Bonnyville data were representative of some of the newer areas of the province while the Red Deer-Wetaskiwin district was well developed agriculturally¹. The differences between these two areas, as brought out in Tables 19 and 20, serve to substantiate the generally accepted opinion that the level of living in the newer regions is lower than that found in those better established.

No complete characterization of "level of living" is attempted here but in Tables 19 and 20 are set out a few features of the home usually considered contributions to well-being.

There existed a considerable difference in lighting facilities between these rural districts. Almost one-half of the Bonnyville farms had coal oil lamps only (non-mantle type) in contrast to about 23 per cent in the Red Deer-Wetaskiwin area. Electric lighting was found on only 4 per cent of the farms in the former district as compared with 15 per cent in the latter. The most common means of heating the home in both districts was the small wood or coal heater, although central heating was found more frequently in the Red Deer-Wetaskiwin district.

¹ A study of the levels of living of 200 farm families in the Red Deer-Wetaskiwin district was made in the summer of 1943 by the Economics Division, Dominion Department of Agriculture in co-operation with the Department of Political Economy, University of Alberta, and the Alberta Department of Agriculture. See, F. M. Edwards, H. E. Elliott, and H. M. Turnbull, "Levels of Living of Farm Families in Representative Rural Areas of Western Canada"; and, F. M. Edwards and H. E. Elliott, "Measurement of the Socio-Economic Status of Farm Families in Western Canada".

TABLE 19.—A COMPARISON OF THE HOUSEHOLD CONVENiences FOUND ON FARMS IN THE BONNYVILLE AREA WITH THOSE IN THE RED DEER-WETASKIWIN DISTRICT, 1943

Proportion Possessing	Bonnyville Area	Red Deer-Wetaskiwin Area
	%	%
Lighting: Electricity.....	4	15
Mantle lamps.....	49	62
Coal oil lamps only (non-mantle).....	47	23
Central heating.....	6	30
Bathroom.....		14
Running water.....		11
Sewage disposal (septic tank).....		10
Cistern.....	4	13
Sink.....	26	39
Sewing machine.....	87	92
Power washer.....	34	62
Telephone.....	2	50

TABLE 20.—A COMPARISON OF SOME CULTURAL ASPECTS OF THE HOMES IN THE BONNYVILLE AREA WITH THOSE IN THE RED DEER-WETASKIWIN DISTRICT, 1943

	Bonnyville Area	Red Deer-Wetaskiwin Area
	%	%
Proportion of homes having:		
Radio.....	77	93
Piano.....	6	33
Ten books or more.....	15	32
One or more magazine subscriptions.....	36	82
Newspaper (weekly or daily).....	92	96
Operator reads four hours per week or more.....	34	50
Housewife reads four hours per week or more.....	19	52
Operator's education Grade VIII or more.....	23	67
Housewife's education Grade VIII or more.....	37	78

Bathrooms, running water and sewage disposal facilities were rare even in the Red Deer-Wetaskiwin district and virtually non-existent in the Bonnyville area.

Sewing machines were so general that they could almost be considered standard equipment. However, the power washer—a labour-saver of some importance—was possessed by only one-third of the farm families in the Bonnyville area as compared with two-thirds in the Red Deer-Wetaskiwin district. One-half of those families lacking a power washing machine had some type of hand operated washer.

In view of the greater isolation of the farms in the Bonnyville district the fact that only 2 per cent have telephones was particularly significant (Table 19). This condition is being alleviated to some extent now since lines are under construction.

There were radios on almost all farms, regardless of the presence or absence of other advantages. The more expensive musical instruments, such as pianos, occurred rarely in the Bonnyville farm homes. While provision of books and magazines was noticeably low in the newer area, most farms received at least one weekly newspaper. The amount of time spent in reading showed considerable variation. The extent of formal education as reported by the operators and their wives, provides another point of contrast.

The Bonnyville Area

The remainder of the discussion is confined to the specific area under investigation—the Bonnyville area.

The Farmstead.—Almost one-half of the farm families in the Bonnyville area were living in log houses. North of the Beaver River, where settlement is of recent date, the proportion of log dwellings was higher, being 66 per cent as compared with 33 per cent in the older district south of the river. A large number of operators indicated that they would have built frame houses within the last two or three years if the material had been available but the fact remains that the log structure has been a characteristic of pioneering in this country. The cash expenditure for the construction of houses was, on the average, \$380 per farm and their present value was estimated to be \$554. This is low when compared with the estimates of the Dominion Housing Census, 1941, which placed the average value of farm dwellings in Alberta at \$989. Practically all homes in this area had a basement but 70 per cent were what was termed "part dirt" basements. About 23 per cent were improved or full basements.

A simple rating of farm buildings was given during the survey, based on structural conditions, evidence of upkeep, and general appearance. Four general classes were used, namely: excellent, good, fair, and poor. The distribution of the farm buildings on the farms studied according to this classification is given in Table 21.

TABLE 21.—RATING OF BUILDINGS AND FARMSTEADS IN THE BONNYVILLE AREA OF ALBERTA, 1943

	Good to excellent %	Fair to poor %
House.....	17	83
Barn.....	10	90
Farmstead.....	33	67

Family Living Expenditures.—In considering the expenditures on family living indicated in Table 22 it must be remembered that the period covered by this study, the twelve months ending April 30, 1943, represents one of the most prosperous years for the district. Furthermore the majority of these farms were sufficiently advanced in their development to take advantage of the unusually favourable price conditions.

The cash family living expenditures varied from \$10 per adult month on farms having less than 50 acres of cropland to \$15 per adult month on those farms having more than 100 acres of cropland. The average total living expenditure per farm for the area as a whole was \$615.

The expenditure on food was probably the most satisfactory aspect of the budget (Table 22) although the amount of money spent on food does not necessarily determine its value from the standpoint of a desirable diet. Similarly the cash expenditure on health and clothing is not an adequate criterion of the effectiveness of such outlays. Education expenditures include such items as fees, and board of children attending schools other than the local tax supported ones, school books and educational supplies purchased directly out of the family purse. It is evident from the sums spent on education that very few attended schools which provided higher education than that offered by their own rural schools.

In view of the small personal expenditures and the negligible automobile expenses it is obvious that these people travel but very little. Their contacts with the world at large are made through the church, the radio, the newspapers, and discussions on market days.

TABLE 22.—FARM FAMILY LIVING EXPENDITURES IN RELATION TO CULTIVATED ACREAGE, ON FARMS IN THE BONNYVILLE AREA, 1942 TO 1943

	Acres Cropland per Farm			
	Less than 50 acres	51 to 75 acres	76 to 100 acres	101 acres or more
	\$	\$	\$	\$
Groceries, fruit, meat, fuel, light and maids hired.....	190	233	231	339
Clothing.....	95	99	131	172
Health.....	67	38	30	69
Education.....	9	3	18	27
Church and charity.....	5	8	18	19
Personal expenses.....	36	70	48	91
Automobile, personal.....	6	8	12	24
New house furnishings.....	14	27	25	32
Life insurance.....		1	2	2
Total living expenditure.....	422	487	515	775
Total adult months in home ¹	42	39	38	52
Number of farms in sample.....	34	36	22	83

¹ A person 15 years of age or more remaining in the home for one month = 1 adult month, persons less than 15 years of age = 0.5 adult months.

Another striking feature of pioneering areas in northern Alberta is the small amount spent for life insurance (Table 22). The same general condition applies to other forms of insurance—there was practically no fire, crop or sickness insurance in the entire area. Fire hazards are great in wooded areas, particularly where house construction is poor. In this area crop damage has frequently been severe. It is generally conceded that accidents and sickness take a relatively heavy toll in these newer districts. Therefore, in an area such as this, where the financial resources of the average settler are quite limited and where the risks of enterprise are high, the utility of insurance is also high. Yet it is precisely in these areas that all types of commercial insurance are practically nonexistent.

Public Services.—There was considerable difference in respect to the availability of social services between the farms in the more advanced stages of development south of the Beaver River and those to the north of the river. The grade school, the church and community hall were located within a reasonable distance of the farm in most cases but in the case of medical services the majority of farm people in the Bonnyville area were in an unenviable position. The means by which the available doctors and nurses could render the maximum service was to remain at their bases in Bonnyville. However, the necessity of travelling from 8 to 15 miles, and sometimes more, by horse-drawn wagons or sleighs reduced the effectiveness of medical services in many instances.

Only 35 per cent of the farms in the Bonnyville area had either a car or truck¹. Two-thirds of the farmers were dependent upon horses for their transportation and, for those farms north of the Beaver River, the average distance to market was 15 miles (Table 23). This meant that an inordinate amount of time was taken up in marketing produce. Furthermore it was not uncommon to find farms isolated for weeks at a time because of impassable roads.

This whole question of providing such areas with the desired public services is a difficult one. For instance, efficiency of marketing is to some extent dependent upon the type and condition of roads but they in turn are provided for in the tax levies, the amount of these being determined by the success of

¹ These vehicles had a value, on the average of \$300, were purchased on a cash basis, largely during the last three years, the majority being models dating back to 1930 or prior to that time. Average operating expenses for the year of this study amounted to \$114.

the enterprises of the community. But the fact remains that, whether a given standard of public services is required to increase the density of population or whether the population must be increased first, adequate social services can in the long-run be maintained only in areas where the man-land ratio is reasonably high.

TABLE 23.—LOCATION OF FARMS IN RELATION TO PUBLIC SERVICES IN THE BONNYVILLE DISTRICT, ALBERTA, 1942 TO 1943

Facilities	Number of Miles from Farm	
	South of Beaver River	North of Beaver River
	Mi.	Mi.
Shipping point.....	6·0	15·0
Grade school.....	2·0	2·0
High school.....	6·0	12·0
Church.....	4·0	4·0
Community hall.....	5·0	2·4
Doctor.....	8·0	15·0
Hospital.....	8·0	15·0

Conclusions

By what criteria should colonization or settlement efforts be appraised? Should they be considered successful if the majority of settlers within a given area persevere and eventually succeed in establishing a suitable farm unit? Or, should this be accepted only if a reasonable level of living can be maintained in the process? Is state aid necessary and, if so, to what extent? These are questions of policy which the country as a whole may want to face. The present investigation of the problems of land settlement in the Bonnyville area was carried out to provide facts basic to an intelligent approach to these problems.

The development of Canada's wooded areas for agricultural purposes continues. But this expansion has had to face the competition of the large-scale prairie farmer who had little or no costs of clearing the land. Thus, one of the main considerations in this northern development has been the cost of clearing and breaking.

The Bonnyville settler has been diligent in developing his farm. Family labour has been used extensively and the cash reward has been small. The result—he now has an average equity, according to his own estimates, of approximately \$6,000. This represents an increase in net worth of more than \$5,000 over a period of 17 years, on an average.

What were the costs? Costs of pioneering are difficult of measurement in dollars and cents—likewise the benefits for that matter—but the data obtained in this study indicate that development in this area has required the acceptance of a comparatively low level of living. Accepted investment channels have avoided these areas because, from a purely monetary standpoint, investment in this land has been unprofitable. Therefore capital improvements have had to be gradual as cash became available from farmer's own resources.

The fact has not been overlooked that certain individuals have prospered more than others and indeed that the financial progress of some has compared quite favourably with results in more fully developed agricultural areas. But on an average, accepting the current cash living expenditures as normal, a settler in this area required about 134 acres of land under cultivation plus 16 productive animal units in order to meet his costs of operation and capital maintenance and to pay five per cent on the investment in land, buildings, machinery, and live-

stock. It is implied here, of course, that such a unit should have sufficient pasture for both the productive and the working livestock. The average acreage per farm (improved and unimproved) was nearly one-half section. The average investment in these factors of production amounted to \$6,215. If this capital was borrowed and the operator paid five per cent interest on it, such a unit would provide little or nothing toward the retirement of the indebtedness.

This situation was fairly descriptive of the financial condition, on an average, for the 175 farms studied. Therefore under the cost-price relationships prevailing during the period covered by this study and, accepting the cash living expenditures made in that period as normal, it must be concluded that the average farm income could not retire the capital invested if the full amount (\$6,215) had been borrowed at five per cent.

In the light of these statements how can the high proportion of owner-operated farms be explained? Several factors have contributed to the gradual increase in equity. In the first place, since little or no capital was borrowed only a small amount of interest has been paid on the farm capital. Also, most of the land was obtained on a homestead basis and the increase in equity therefore was greater during the first years than the actual cash outlay made by the operator. Thus to a certain extent an unearned increment may have materialized. Furthermore a portion of the level of living was sacrificed in order to accumulate capital.

Measured in monetary terms the reward to the generation which has developed the farms in the Bonnyville area is not large; nevertheless it is substantial. The net material accumulation may not have been any greater had the settler been able to break out more of his land and acquire more stock and equipment at an earlier stage in his occupancy. It can be argued, however, that the net material accumulation could have been made with less sacrifice on his part and also that of his family if he had had that opportunity. Therefore if the period required for establishing a satisfactory farm unit is to be reduced, capital accumulation must be aided either by funds obtained from outside sources of employment or through state participation. The opportunities for obtaining revenue from other industries are quite limited in northeastern Alberta. But effective state participation could be realized if the government engaged in one or both of the following activities: (1) the provision of short term, intermediate, and long term credit at a rate as near the cost to the government as possible; and (2) the provision, at cost, of heavy clearing and breaking equipment. These measures, administered properly, would be of real value in a more rapid development of the northern fringe.

Appendix

SOIL SURVEY REPORT¹

In August, 1943, there was made a reconnaissance survey of the Bonnyville district and a broad reconnaissance survey of the area between Ardmore and Cold Lake. In all, soil information was obtained on tps., or parts thereof, 60 to 63 inclusive, in rges. 1 to 6 inclusive, W. 4th mer. Included with this report is a soil map of tps. 60 to 63 inclusive, rges. 4 to 6 inclusive (see Figure 5). The soil descriptions in this report will be confined to the area shown on this map, an area of approximately 270,000 acres.

In general, this area is a relatively level plain with a slight slope to the east: there is some rolling land north and east of Muriel Lake and north and west of Rat Lake. A large percentage of the area is settled and many quarter-sections are practically all cultivated. Originally, the area was part parkland and part fairly thickly tree covered. Aspen poplar is the principal tree growth. Some evergreens are found, principally in the muskegs and along the sand ridges.

Available meteorological records for points on or near the surveyed area indicate that the average annual precipitation is between 14 and 15 inches and that the mean annual temperature is between 30° and 31° F. The soil profiles occurring in this area indicated that there has been a fairly low evaporation rate: that is, they have been formed under relatively humid soil moisture conditions.

Seven different symbols are used on the soil map to indicate the different soil types mapped. Although texture differences were noted in the field, the separations shown on the map are mainly on the basis of the degree of degradation in the average soil profile of the area. In some areas more than one symbol appears; this indicates that the two or more soil types were in such close association that separation was not possible in the type of survey conducted.

Following is a brief description of the soil areas that appear on the map:

1. The black soil area between Moose Lake and Ardmore.—This area is shown on the map by a dot legend and comprises about 45,000 acres. In general the soils in this area are a black to a slightly grey black loam to silt loam. The black surface or A horizon averages from 8 to 12 inches deep. Two samples from this soil type averaged 0·48 per cent nitrogen, in the surface foot: this is a relatively high nitrogen content and indicates a high organic matter content. The total phosphorus content in the surface foot of these same two samples averaged 0·102 per cent; also quite high. A large percentage of the soils in this area are solonetzic. This is indicated morphologically by a grey leached A₂ horizon, averaging about two inches in thickness, between the A₁ and B₁ horizons and by a sharp break to the somewhat columnar B₁ (sub-surface) horizon. The area appears to be of sorted glacial to glacial-lacustrine deposition. The subsoil is a medium to low lime till containing a few stones and is medium to heavy textured. The surface is practically stone-free. The area is of undulating to depressional topography and there are, therefore, spots of restricted drainage throughout. Some of these lower spots have a shallow muck accumulation over a medium to heavy textured mineral soil. Samples taken from two of these lower areas had a pH of 9·2 and 9·6 respectively in the surface horizon. This is quite alkaline. Total water soluble salt analysis of these samples averaged about 0·20 per cent; nearly half of which was bicarbonate. Subsoil samples from these areas had a lower salt content than

¹ Report submitted by Messers. W. Earl Bowser and R. L. Erdman of the Experimental Farms Service, Dominion Department of Agriculture in co-operation with the Department of Soils, University of Alberta.

the surface samples. These analyses indicate that some black alkali is present and that a somewhat limited range of crops could be satisfactorily grown on these areas. In general, the better drained phases of this soil type is very good arable land.

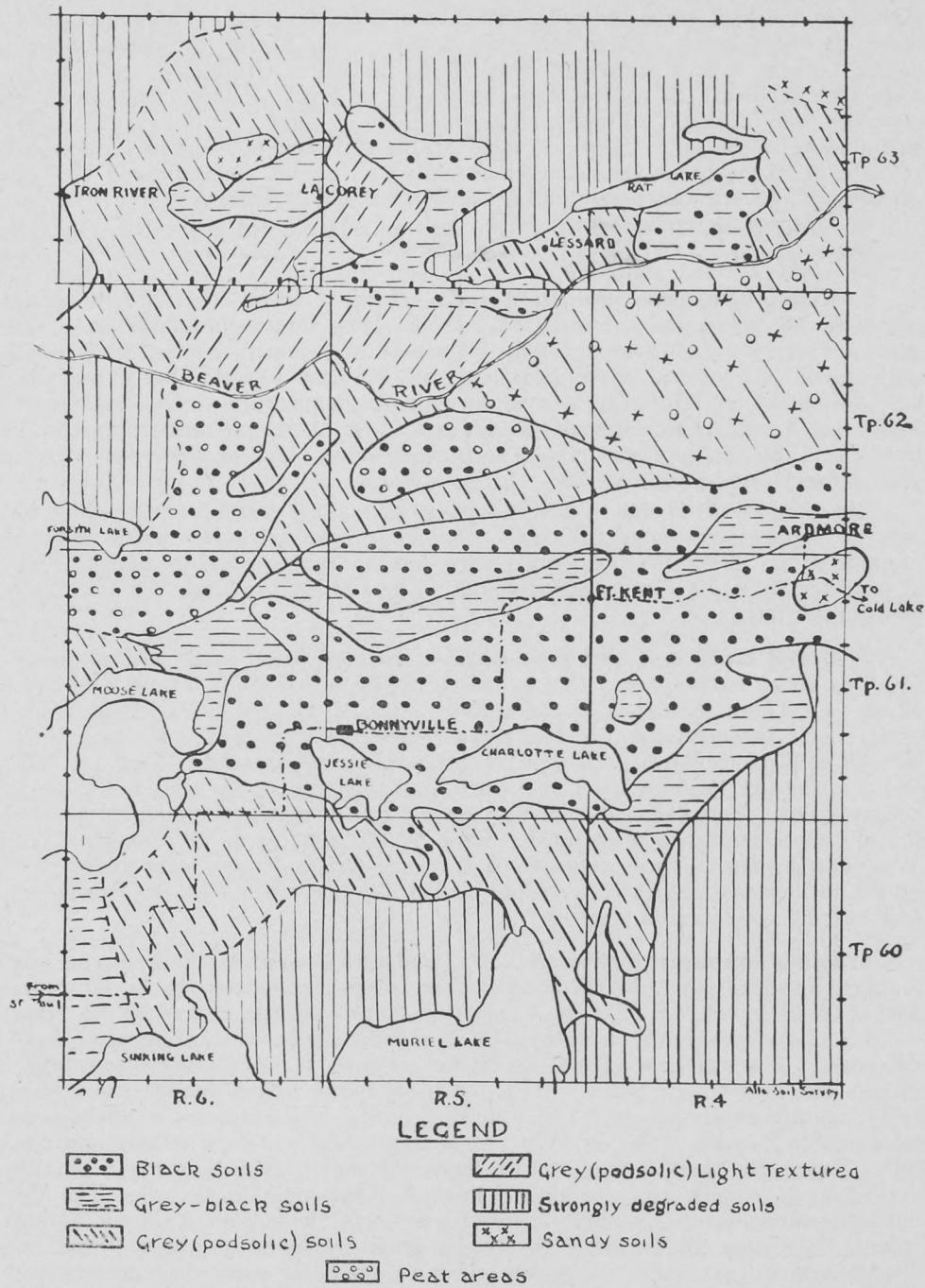


FIGURE 5. Soil map of the area.

2. The grey-black transition soil areas.—There are five areas of this soil type shown on the map by means of a short horizontal dash legend. These areas total approximately 17,000 acres. With the exception of the area in tp. 60, rge. 6, all areas lie adjacent to or within the main black soil area described in (1) above. These soils are generally a loam to heavy loam in texture and are of sorted to unsorted glacial till deposition. There are some stones in these areas. There are from 2 inches to 5 inches of black surface or A₁ horizon over a somewhat leached A₂ horizon. Originally these areas were tree covered. In general the topography is level to undulating and the soils are well drained. They are, in the main, a few feet higher than the surrounding black soil. They are good arable soils but considerably lower in organic matter content than the black soils and should be improved by the growing of clovers and possibly the use of artificial fertilizers.

The area in tp. 60, rge. 6, is a wide draw and in general is the better phase of transition soils.

3. Mixed black and transition soils.—Two of these areas are mapped, one in tp. 63, rge. 4 and one in tp. 63, rge. 5. They total approximately 10,000 acres. These are shown on the map by means of a mixed dot and horizontal dash legend. In general, these areas are from silt loam to light clay in texture. The area south of Rat Lake is level to undulating topography. All are fairly well drained and quite uniform. It appears to be of glacial-lacustrine deposition and is practically stone-free. The surface soil is black to grey-black. It is good to very good arable land.

The area in tp. 63, rge. 5 is a basin-like area along a small creek. It is of level to depressional topography and some spots have a shallow muck to peat accumulation. There is considerable variation in drainage, texture and amount of peat accumulation throughout the area. The soil is from fairly good to very good arable land.

4. Mixed black soil and peat areas.—**Two of these areas are mapped** totalling about 15,000 acres. One area is in tp. 62, rge. 5 and one in tps. 61 and 62, rge. 6. These are shown on the map by a mixed dot and circle legend. The area is level to depressional and of sorted glacial and glacial-lacustrine deposition. The level (upland) portion is black loam to silt loam and is similar to the soil described in (1) above. The depressional topography has generally a peat accumulation. This varies in thickness from 4 or 5 inches to spots with 12 to 18 inches. It is mainly a grass peat. Some of the peat areas are sparsely tree covered and some fairly heavily wooded. Some of the deeper peats might well be left to help maintain a water supply. The shallower peats can be cultivated and become good arable land.

5. Fairly strongly degraded soil (podsolic).—Six of these areas are mapped totalling about 50,000 acres. These areas are located in tp. 60, rg. 4 to 6, tp. 61, rge. 6; tp. 62, rg. 4 to 6; tps. 62 and 63, rge. 6; and tp. 63, rg. 4 and 5. These are shown on the map by a broken cross hatch slanting northwest-southeast. The soil is of glacial deposition on level to undulating topography. Stones are fairly numerous. Originally these areas had a fairly heavy tree cover, mainly aspen poplar. The following profile is characteristic: there is a total of 2 to 3 inches of A₀ and A₁, that is, leaf mould and dark mineral surface soil. Under this there is from 4 to 6 inches of the leached A₂ horizon that is very light in colour, and averages a loam to light loam in texture. The B₁ horizon (sub-surface) is a brown heavy loam to clay loam glacial till containing stones. The lime concentration horizon is generally found at about 40 inches. There are small patches of transition soil and some peaty spots throughout these areas. A sample of this degraded soil averaged 0.08 per cent nitrogen in the

surface foot and 0.05 phosphorous in the surface foot. They have, therefore, low natural fertility and must be built up to produce satisfactory yields. The lower fertility will become more apparent the longer the soils are cultivated.

6. Fairly strongly degraded light textured soil.—There are two areas of this soil type totalling about 20,000 acres. They are located in tps. 62 and 63, rges. 5 and 6, and in tps. 60 and 61, rge. 6. These are shown on the map by a broken cross hatch legend slanting northeast-southwest. These areas are somewhat variable: in general a light loam, but having sandy pockets throughout. The area is generally of mixed glacial and alluvial deposition. The lighter portions, if strongly degraded, are inferior soils. Portions of the area in tp. 62 are somewhat peaty.

7. Strongly degraded soils (podsolic).—There are five areas of this soil type mapped, totalling about 65,000 acres. These areas are located in tp. 60, rges. 4, 5, and 6; tp. 62, rge. 6; tp. 63, rge. 6; and tp. 63, rges. 4 and 5. They are shown on the map by a vertical line legend. These areas are of undulating to rolling topography and the parent material is a somewhat sandy till containing stones; there are some very stony spots. The area was, and in the main still is, fairly heavily tree covered. There is a very shallow A₀ and A₁ (surface) horizon, and a fairly deep (5 to 9 inch) leached A₂ horizon. The A₂ horizon is a light loam to fine sandy loam in texture and is very light in colour. A sample from this soil type averaged only 0.024 per cent nitrogen in the surface foot and only 0.025 per cent phosphorus in the surface foot. Due to the roughness of the topography, the fairly heavy tree cover and the relatively low natural fertility of these soils, they should be considered as of doubtful arable value excepting under exceptional circumstances.

8. Sandy soils.—Two areas of sandy soil are mapped, one in tp. 61, rge. 4 and one in tp. 63, rge. 6. They total about 2,000 acres and are shown on the map by an X legend. In general they are degraded soils although the lower spots are somewhat darker. Those that occupy the higher topographic positions would tend to be droughty and are inferior soils.

9. Mixed sand, peat and degraded soil.—One area of this mixed type is mapped in tps. 62 and 63, rges. 4 and 5, and is shown on the map by a legend that is a mixture of circles, X's and broken cross hatch. It totals about 23,000 acres. Sand streaks cross this area, some of them covered with Jack pines. These generally are non-arable. There are some fairly large peat areas: these vary in the thickness of peat accumulation. The remainder, however, is fairly good transition soil, generally with some black surface. Some of this is being farmed.

10. The remaining acreage (approximately 23,000 acres) is water, as permanent lakes. Moose Lake and Muriel Lake are the largest of these lakes. These are of value as local resorts, as a source of fish and they also help to maintain the local water supply.

Since there is a wide variation of soil types in this area, there is, therefore, considerable differences in the cropping practices best adapted to these types. Briefly some of the principal problems of soil management in this area are: in the black soils, the depressional areas (areas of restricted drainage) will have a limited range of possible crops; in the degraded soils low fertility is of first importance and it is suggested that the inclusion of legumes in the rotation and the use of fertilizers would be beneficial; in the peaty areas a limited range of crops should be grown at least until such time as the organic surface is well decomposed. One other fact should be mentioned here. The average annual rainfall is not high (this is counterbalanced somewhat by a lower average temperature) and, therefore, indiscriminate clearing of the trees and draining of the swamps might tend to develop a droughty condition in some of the soils.

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